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TRINIDAD AND TOBAGO



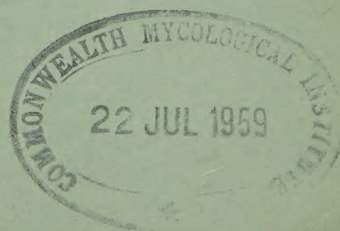
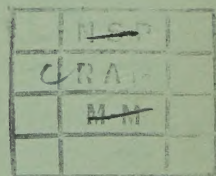
WITH THE COMPLIMENTS
OF THE CHIEF TECHNICAL OFFICER
DEPARTMENT OF AGRICULTURE
TRINIDAD AND TOBAGO

ADMINISTRATION REPORT
OF THE
AGRICULTURE DEPARTMENT
FOR THE YEAR 1956

GOVERNMENT PRINTING OFFICE, TRINIDAD, B.W.I.—1958

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1956 ADMINISTRATION REPORT ON
THE DEPARTMENT OF AGRICULTURE

CONTENTS

	PAGE
STAFF	ix
INTRODUCTION	1
AGRICULTURAL POLICY	2
AGRICULTURE IN THE COLONY	4
GENERAL CONDITIONS	4
AGRICULTURAL PRODUCTS FOR HOME CONSUMPTION	4
<i>Crops</i>	4
<i>Livestock</i>	5
Supply of Stock Feed	5
Supply of Animal Products	5
Apiculture	5
AGRICULTURAL EXPORTS IN 1956	5
<i>Sugar</i>	5
<i>Cacao</i>	6
<i>Citrus</i>	6
<i>Coconut</i>	7
<i>Bananas</i>	7
<i>Coffee</i>	7
<i>Tonca Beans</i>	7
<i>Rubber</i>	7
WORK OF THE DEPARTMENT OF AGRICULTURE	8
EXTENSION	8
CENTRAL EXPERIMENT STATION	10
General	10
Outline of Investigations	10
ST. AUGUSTINE STATION	11
Weather	11
Citrus	11
Avocado	12
Mango	12
Breadfruit	12
Vegetable and Ornamental Plants	12
Planting Material of Field Crops	12
Orchard Crops	12
Vegetable Garden	12
Irrigation System	12

CONTENTS—CONTINUED

	PAGE
ROYAL BOTANIC GARDENS	13
Exchange of Planting Material and Information	13
Introductions	13
Replacements	13
Orchid Collection	13
Decorative Annuals	13
Public Parks	13
SUGARCANE	14
CACAO	14
<i>Clonal and Fertilizer Trials—Estates</i>	14
<i>Breeding and Selection for Witches' Broom Resistance</i>	15
<i>Spraying Trials</i>	15
<i>Trials on Types of Containers for Growing Rooted Cuttings</i>	15
<i>Insect Pests</i>	15
<i>Virus Disease</i>	15
Witches' Broom Disease	16
Rosellinia Root Disease	16
Pod Disease	16
CACAO SUBSIDY SCHEME	16
<i>Principles</i>	16
Rehabilitation	16
<i>Manuring Subsidy</i>	17
<i>Replacement of Cacao by Alternative Crops</i>	17
<i>Propagation</i>	17
<i>Propagating Stations</i>	18
La Pastora	18
La Reunion	18
Marper	18
Louis d'Or	18
King's Bay	18
<i>Estate Propagators</i>	19
<i>Cost of Plant Production</i>	19
FRUIT CROPS	19
<i>General</i>	19
<i>Rootstock and Management Trial</i>	19
<i>Transplanting Trials</i>	20
<i>Tree Management Trials</i>	20
<i>Field Management Trials</i>	20
<i>Orange Harvesting Trial</i>	20

CONTENTS—CONTINUED

PAGE

<i>Epiphyte Control on Grapefruit</i>	20
<i>Orange and Grapefruit Manurial Trials</i>	21
<i>Citrus Collection</i>	21
<i>Citrus Nursery</i>	21
<i>Pineapple Observation</i>	21
<i>Plant Propagation</i>	21
<i>Gauva Selection</i>	21
<i>Tropical Fruit Museum</i>	22
<i>Sub-Tropical Fruit Museum</i>	22
<i>Diseases</i>	22
<i>Melanose Spotting of Grapefruit</i>	22
<i>Greasy Spot</i>	22
<i>Seedling Lime Disease</i>	22
BANANAS	22
<i>Planting Material and Nurseries</i>	22
<i>Diseases</i>	22
<i>Leaf Spot</i>	22
<i>Moko Disease</i>	23
<i>Pests</i>	23
COCONUTS	23
<i>Advisory Work</i>	24
<i>Pests and Diseases</i>	24
<i>Red Ring Disease</i>	24
<i>Wilt Disease</i>	24
RICE	24
<i>Rice Expansion Programme</i>	24
<i>Plum Mitan and Fishing Pond Rice Expansion Schemes</i>	24
<i>Caroni Savannah Scheme</i>	25
<i>Central Experiment Station Paddy Fields</i>	25
<i>Seed Paddy Distribution</i>	26
<i>Paddy Competition</i>	26
<i>Soil Survey</i>	26
<i>Engineering Investigation for Rice Expansion</i>	26
<i>Seed Production</i>	26
<i>Variety Trials</i>	26
<i>Other Trials</i>	27
<i>Pests and Diseases</i>	27

CONTENTS—CONTINUED

	PAGE
OTHER CROPS	27
<i>Maize</i>	27
<i>Sorghum</i>	27
<i>Vegetables</i>	27
<i>Sisal</i>	27
<i>Cover Crops</i>	27
<i>Oil Crops</i>	28
Oil Palms	28
Palmarosa	28
PESTS AND DISEASES	28
<i>Sclerotium Wilt Disease</i>	28
<i>Bacterial Wilt Disease</i>	28
<i>Pineapple Wilt Disease</i>	28
<i>Moth Borer of Sweet Potato</i>	28
<i>Vegetable Crops—Pests</i>	28
GRASSES AND FORAGE	29
<i>Central Experiment Station</i>	29
SOIL SURVEY	29
SOIL CONSERVATION	30
<i>Erosion Investigations</i>	30
<i>Demonstrations</i>	30
AGRICULTURAL ENGINEERING	30
<i>Field Engineering</i>	30
<i>Power Supply</i>	31
<i>Irrigation Trials</i>	31
<i>Sprinkler Uniformity Patterns</i>	32
<i>Fertilizer Distributor</i>	32
<i>Water Requirements</i>	32
<i>Drainage</i>	32
<i>Grass Drying</i>	32
<i>Machinery</i>	32
Departmental Equipment	32
STORED PRODUCTS	33

CONTENTS—CONTINUED

	PAGE
APICULTURE	33
ANIMAL HEALTH	34
<i>Incidence of Animal Diseases in the Caribbean</i>	34
<i>Legislation</i>	34
<i>Notifiable Diseases</i>	35
Paralytic Rabies (Bat transmitted)	35
Swine Fever	37
Newcastle Disease	37
Swine Erysipelas	37
Tuberculosis	37
<i>Non-Notifiable Diseases</i>	37
<i>Veterinary Attendance—Police Horses and Dogs</i>	37
<i>Veterinary Practice Service</i>	37
<i>Veterinary Diagnostic Laboratory</i>	38
<i>Investigational Work</i>	38
<i>Feeding Trials at the St. Joseph Stock Farm</i>	38
ANIMAL HUSBANDRY	39
<i>Livestock Shows</i>	39
<i>Breed Improvement</i>	39
<i>Artificial Insemination</i>	40
<i>Stock Farms</i>	40
<i>Milk Production</i>	41
<i>Horsekind</i>	42
<i>Pigs</i>	43
<i>Goats</i>	43
<i>Sheep</i>	43
<i>Poultry</i>	44
<i>Fences, Pasturage, Irrigation, Buildings, &c.</i>	45
LAND SETTLEMENT	45
<i>Development of New Areas</i>	45
<i>Maintenance of Land Settlements</i>	46
FISHERIES DIVISION	46
<i>Improvements to Fishing Beaches</i>	46
<i>Investigations</i>	47
<i>Statistical Data</i>	47
<i>Finance of the Fishing Industry</i>	47
<i>Pond Culture of Fish and Fresh Water Fisheries</i>	47

CONTENTS—CONTINUED

	PAGE
MARKETING DIVISION	48
<i>Local Market Conditions and Supplies</i>	48
<i>Guaranteed Prices</i>	48
<i>Purchases of Local Produce</i>	48
<i>Importations</i>	48
<i>Shipments from Tobago to Trinidad</i>	49
<i>Ground Provisions Depot</i>	49
<i>Seeds and Planting Material</i>	49
<i>Sales of Fertilizers, Insecticides and Livestock Medicines</i>	49
<i>Rice Offal</i>	49
<i>Livestock Feeds</i>	49
<i>Export of Bananas to the United Kingdom</i>	49
<i>Dehydrated Citrus Pulp Meal</i>	50
<i>Business Turnover</i>	50
PLANT QUARANTINE	50
<i>Mediterranean Fruit Fly</i>	50
<i>Plant Protection Work</i>	50
<i>Phytosanitary Certificates</i>	51
<i>Permits</i>	51
<i>Quantity of Plants and Plant Products imported and inspected at Port-of-Spain</i>	51
<i>Quantity of Plants and Plant Products imported and inspected at Piarco</i>	51
<i>Production Sales and Distribution</i>	51
<i>Revenue</i>	51
<i>Publications</i>	51
<i>Conferences, Meetings, Tours, &c.</i>	52
<i>Conferences and meetings</i>	52
<i>Scholarships, Fellowships and Study Leave</i>	53
<i>Advisers to Other Colonies</i>	53
<i>Overseas Tours and Courses</i>	53
<i>Staff</i>	54

CONTENTS—CONTINUED

	PAGE
LEGISLATION	55
TABLES	58
I— <i>Annual Rainfall</i>	58
II— <i>Mean Monthly Rainfall</i>	59
III— <i>Output of Fresh Fruit and Canned Products—Co-operative Citrus Growers' Association</i>	59
IV— <i>Imports of Specified Commodities, 1956</i>	60
V— <i>Agricultural Exports, Trinidad and Tobago, 1956</i>	61
VI— <i>Exports of Manufactured Agricultural Products</i>	62
VII— <i>Trinidad Crops Statistics—Sugar</i>	62
VIII— <i>Exports and Value of Raw Cacao, Trinidad and Tobago</i>	63
IX— <i>Analysis of Orchards according to Age Groups</i>	63
X— <i>Number of Orchards in accordance with Acreage Groups</i>	63
XI— <i>Analysis of Orchards in accordance with Acreage Groups</i>	64
XII— <i>Crown lands recommended for Probationary Agreements and 25 year leases</i>	64
XIII— <i>Pattern of Crown Land Distribution</i>	64
XIV— <i>Total Distribution of Vegetable and Ornamental Seedlings for 1953—1956</i>	65
XV— <i>Sugarcane varieties—Per cent. of total acreage reaped (Sugarcane Estates only) 1952-1956</i>	65
XVI— <i>Sugarcane varieties—Per cent. of Plant cane acreage reaped (Sugar Estates only) 1956</i>	65
XVII— <i>Correlation between Yields and Percentage of Borer Infestation</i>	66
XVIII— <i>Distribution by Size of Estate, of approved Applications for Cocoa Subsidy, 1953-56</i>	66
XIX— <i>Demand and Allocation— Clonal Cacao plants</i>	66
XX— <i>Distribution to Planters—Composition by Varieties</i>	66
XXI— <i>Manuring Subsidy</i>	67

CONTENTS—CONTINUED

	PAGE
XXII— <i>Distribution, by size of Estate, of approved Applications for Cacao Replacements, 1953-1956</i>	67
XXIII— <i>Cost per Plant Production</i>	67
XXIV— <i>Revenue Figures, 1956</i>	67
XXV— <i>Summary of Notifiable Livestock Diseases occurring in the Colony</i>	68
XXVI— <i>Numbers, Classes and Percentages of Reactors to Tuberculin Tests 1954-1956</i>	68
XXVII— <i>Total Services by selected Sires, 1956</i>	68
XXVIII— <i>Comparative Sales at Stock Farms, 1955-1956</i>	68
XXIX— <i>Comparative Total Livestock Strength—Stock Farms, 1955-1956</i>	69
XXX— <i>Milk Yield, St. Joseph Farm, 1952-1956</i>	69
XXXI— <i>Horsekind strength on Stock Farms—31st December 1956</i>	69
XXXII— <i>Pig strength on Stock Farms—31st December, 1956</i>	70
XXXIII— <i>Goat strength on Stock Farms— 31st December, 1956</i>	70
XXXIV— <i>Poultry strength on Stock Farms—31st December, 1956</i>	70
XXXV— <i>Fish handled at the Port-of-Spain Fish Market during the period—1st January to 31st December, 1956</i>	70
XXXVI— <i>Fish handled at the San Fernando Fish Market—1st August to 31st December, 1956</i>	71
XXXVII— <i>Imports of Fish and Fish Preparations—1956</i>	71
XXXVIII— <i>Guaranteed Minimum Prices for Locally Grown Foods</i>	71
XXXIX— <i>Quantities of Produce Purchased by the Marketing Board</i>	72
XL— <i>Imports of Vegetables and Fruit from B.W.I. Territories</i>	72
XLI— <i>Shipments of Food Crops from Tobago to Trinidad</i>	72
XLII— <i>Sales of Fertilizers, Insecticides and Veterinary Medicines</i>	72
XLIII— <i>Sales of Livestock Feeds</i>	72
XLIV— <i>Business Turnover, Marketing Board</i>	73
XLV— <i>Production, Sales and Distribution, 1956</i>	73

DEPARTMENT OF AGRICULTURE, TRINIDAD AND TOBAGO
SCIENTIFIC AND TECHNICAL STAFF

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Manager, Tobago Farm

...

...L. W. PREUDHOMME

Chief Fruit Inspector

...

...L. P. LANGE

Zoologist (Part-time)

...

...A. M. GREENHALL, B.A., M.S.

<i>Senior Anti-Rabies Inspectors</i>	...E. J. ASHE L. CRAWFORD
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In addition there are:	...129 FIELD ASSISTANTS 8 SCIENTIFIC ASSISTANTS

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<i>Officer-in-Charge, Marper Propagating Station</i> ...	...A. V. MUSSIO
<i>Officer-in-Charge, La Reunion Estate</i>	C. A. PHILLIPS
<i>Chief Cacao Subsidy Inspector, Tobago</i>	...E. A. BRUNTON
<i>Chief Cacao Subsidy Inspector, Trinidad</i>	...E. A. BLACK
<i>Senior Cacao Subsidy Inspectors</i>	...J. H. DEANE F. LEZAMA M. ALI
<i>Experimental Officer</i> ...	...C. A. SAMAROO
<i>Supervisor of Estate Propagators</i>	...VACANT
In addition there are:	...27 FIELD ASSISTANTS

Marketing Board

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<i>Senior Marketing Assistants</i> ...	...F. A. BAIN J. FERNANDES J. B. GONSALES 1 VACANT
In addition there are:	...23 MARKETING ASSISTANTS 1 MAINTENANCE MECHANIC

INTRODUCTION

RAINFALL was high for the first quarter of the year; somewhat intermittent during the second and third quarters to the detriment of agricultural operations; while heavy rainfall during the fourth quarter caused flooding.

There was no increase in the wages of daily-paid Government workers because of a rise in the cost of living index.

Preliminary figures indicate that the value of all agricultural exports was \$45,589,215 as compared with \$53,093,160 in 1955.

The quantity of sugar produced was 160,230 tons as compared with 192,793 tons in 1955; the reduction being caused by severe froghopper attacks and by a strike of sugar workers during the reaping season. Sugar exported during 1956 totalled 137,373 tons as compared with 169,732 tons in 1955.

Cacao exported amounted to 194,971 cwt. valued \$10,485,241 as compared with 146,962 cwt. valued \$11,773,390 in 1955. Good progress can once more be recorded for the rehabilitation of the industry by means of the Cocoa Subsidy Scheme.

The total value of all citrus products exported was \$2,647,058 as compared with \$2,953,098 in 1955.

The lime industry continues to decline.

A survey of the Citrus Industry was conducted with the help of the Extension Division.

In coconuts, the spread of Red Ring Disease was alarmingly great. Preliminary investigations conducted by a Nematologist indicated that the main source of infection was from the soil and through the roots of plants.

Exports of bananas to the United Kingdom under the 15-year contract with Union International are tending to increase. Twenty-two shipments totalling 214,341 bunches were made, which is a record for banana shipments since the resumption of the trade after the Second World War. Interest in banana production has been maintained and cultivations are being extended.

Research work at the Central Experiment Station continued on the lines of agronomy and pest and disease control. Investigations included variety trials on sugarcane; evaluating the performance of various cocoa clones under different soil types; hybridization between heavy bearers and witches' broom resistant cocoa clones and selection of progeny combining these qualities; low volume spraying for the control of Black Pod Disease of cacao; trials on different types of containers for growing rooted cacao cuttings; observations on low volume spraying with oil-based fungicides for control of Leaf Spot Disease of bananas; observations on pasture grasses and investigations on the irrigation of grass land.

Development work on Land Settlements, which started in 1953 with funds provided by the Colonial Development and Welfare Scheme, continued on six locations. At the beginning of the year, 23 Land Settlements, previously maintained by the Land Settlement Division, were brought under the supervision and control of the Extension Division for purposes of co-ordination.

With regard to the production of rice, there are indications that planting is tending to decrease. The investigations on the possibilities of rice expansion in Trinidad by a firm of Consulting Engineers commissioned by F.A.O. which started at the end of 1954 were completed. An interesting preliminary report was received, and Government now awaits the final report of the Engineers.

Animal Health was very satisfactory. The incidence of Paralytic Rabies (Bat-transmitted) was of an exceptionally low order; for the fourth consecutive year the Colony remained free of Swine Fever; there has been a decrease in the incidence of Newcastle Disease and the occurrence of Tuberculosis continued to be low.

Research work in Animal Health and Animal Husbandry was restricted because of specialist staff shortages.

The Artificial Insemination Service which started in 1955 has been gradually extended to cover almost the Northern, Eastern and Central areas of Trinidad.

Services by selected sires at Stock Farms and district Breeding Units continued to be available. There have been routine sales from Stock Farms and District Stations of young breeding stock which included young bulls, pigs, poultry, chicks and eggs. Grade dairy heifers at reduced prices were also sold to selected peasant farmers under special agreement.

Emphasis is being made on the use of good quality grass as the best and cheapest food for milk production. Accordingly, dairy herds of the Department of Agriculture are kept at pasture both by day and night. This policy at the St. Joseph Farm, has resulted in the reduced feeding of concentrates to a record low level, since the animals received their maintenance and produced their first gallon of milk on grass alone.

As a result of an outbreak of Mediterranean Fruit Fly in Miami, Florida, United States of America, the Plant Protection Regulations were amended to control the entry of fruit from the United States of America. The Colony was included in a survey of the Caribbean area for Mediterranean Fruit Fly.

At the end of the year, the Fisheries Division became a separate Department, directly responsible to the Honourable the Minister of Agriculture, Lands and Fisheries.

AGRICULTURAL POLICY

1. Previous reports have outlined the recommendations of the Local Food Production Committee in considerable detail, and it is not considered necessary to reproduce them here. Suffice it to say that the recommendations follows the general principles listed below.

- (1) Optimum use of the land for the purpose to which it is best suited, to be the basic condition of the measures to be pursued.
- (2) Increase in local food production to be undertaken as an integral part of a long-term project aimed at placing all phases of local agriculture at the highest sustained potential, while ensuring that, in case of a shipping crisis, adequate food would be available.
- (3) The agricultural education of the rural population to be a major function of the Extension Division of the Department of Agriculture.
- (4) Complete self-sufficiency in all respects not being a sound objective, either economically or sociologically, and the increase of exports being essential for maintaining the rising standard of living of the growing population, a proper balance to be maintained between production for local consumption and production for export.
- (5) The scope of the Agricultural Credit Bank to be widened to enable loans to be issued for fisheries development and for the manufacture or processing of agricultural or fishery products.
- (6) Controls on the prices of locally-grown foods to be abolished.
- (7) Measures to be taken to reduce the indiscriminate damage by fire to soils and crops.
- (8) Income tax legislation to be amended to encourage greater capital investment in agriculture.
- (9) Greater emphasis to be placed on livestock production; the slaughter of females to be forbidden and the Department of Agriculture to be equipped for the provision of much larger numbers of breeding stock.
- (10) Tenancy laws to be amended to encourage proprietors to rent and use land.
- (11) Rebate of the tax on gasoline, to be expanded to all field cultural operations and fishing boats.
- (12) Crown lands to be leased not sold; a probationary agreement involving a programme of work to precede the granting of a long-term lease.
- (13) Shifting cultivation to be avoided and emphasis placed on permanent long-term residential occupation.
- (14) The planting of food bearing trees to be encouraged.
- (15) Increased production of rice to be encouraged.
- (16) A plant to be erected for the conversion of citrus waste to stock feed.
- (17) The production and distribution of balanced rations to be improved and extended.
- (18) Additional breeding units to be constructed.
- (19) Cacao Rehabilitation to be accelerated.
- (20) Banana plants to be imported for accelerating the establishment of an export industry.

(21) Government teak plantations to be extended by 200 acres per annum, not only for wood, but for the short-term food crops produced in the initial stages of teak planting.

(22) The fishing industry to be modernized and improved.

(23) An Agricultural Engineer to be appointed.

(24) Two hostels for short practical courses in agriculture to be erected.

(25) Audio-Visual aids for agricultural education to be encouraged.

Most of these have been implemented or are in the course of implementation; and the report which follows indicates the progress made in 1956.

AGRICULTURE IN THE COLONY

General Conditions

2. The annual rainfall from a number of selected stations throughout the Colony and the monthly mean for 1956 as well as for a 25-year average, are given in Tables I and II. These data have been kindly supplied by the Hydrologist of the Wdrks and Hydraulics Department. Rainfall was unusually high for the first quarter of the year and somewhat intermittent during the second and third quarters to the detriment of agricultural operations. Heavy rainfall during the fourth quarter resulted in flooding and damage to cultivations.

3. There was no increase in the wages of daily-paid Government workers because of a rise in the cost of living index.

Agricultural Products for Home Consumption

CROPS

4. Ground provisions continued to be in fair supply and planting operations were maintained. Green vegetables were not plentiful during the first half of the year because of the unusually wet conditions that prevailed. They were, as usual, scarce during the latter part of the year. Legumes were in limited supply.

5. With regard to rice, planting was completed rather late and the acreage established was somewhat less than usual. From a preliminary survey, there are indications that there is a reduction by some 20 per cent. of the areas planted at present when compared with the area planted in 1952.

6. Yields were, however average at 2,200 lb. of cleaned, dried and winnowed paddy per acre. As usual local production was insufficient for the Colony's requirements, and it was necessary to import 18,545 tons from British Guiana and the United States of America.

7. With regard to fruit, though citrus and bananas are grown for export, fairly large quantities are consumed. Table III shows that 125,222 cartons A2 cans of citrus juice were sold locally. Apart from citrus and bananas, avocados and mangoes were the most important fruit produced. Most of these were consumed locally.

LIVESTOCK

8. *Supply of Stock Feeds*—The local corn crop was again a poor one with the result that supplies had to be imported to meet requirements. The use of rice offal by livestock owners continued to increase. Because of this, the Marketing Board had to obtain the bulk of its supplies of rice bran and "broken rice" for its prepared rations from British Guiana. Supplies of cotton-seed meal and molasses were adequate. The supply of coconut meal improved markedly. About 2,071 long tons of dehydrated citrus pulp were made at the plant operated by the Co-operative Citrus Growers' Association.

9. *Supply of Animal Products*—Returns from Municipal and Government controlled slaughter houses, which do not represent complete data for all livestock slaughtered in the Colony, showed that 1,109.9 tons of beef and veal; 527.8 tons of pork and 70.3 tons of mutton were produced from animals slaughtered. Similarly, complete production figures for fresh milk are not available, but returns from the larger producers show that they handled 21,217 gallons per month, on the average. The supply of meat, milk, fish and animal products, generally, was inadequate for self-sufficiency and these commodities had to be supplemented by importation as will be seen by the preliminary figures given in Table IV.

10. *Apiculture*—There were 242 registered apiaries at the close of the year. The honey flow was exceptionally poor because of the wet dry season.

Agricultural Exports in 1956

11. Preliminary figures indicate that the value of agricultural exports, raw and manufactured, was \$45,589,215 as compared with \$53,093,160 in 1955.

12. The quantity and value of the various agricultural exports are shown in Tables V and VI the data for which were kindly supplied by the Government Statistician. The figures quoted are preliminary ones and are subject to a final review.

SUGAR

13. The quantity of sugar produced was 160,230 tons, compared with 192,793 tons in 1955. The main reasons for this large reduction were the extremely severe froghopper attacks experienced, and the strike of sugar workers in April-May, which resulted in manufacturing having to be continued until the end of June under wet weather conditions that had a serious effect on the cane quality, and the quantity of cane required to produce a ton of sugar.

14. The final crop figures compared with the previous year are set out in Table VII.

15. It will be noted that deliveries by cane farmers in 1956 amounted to 568,790 tons as compared with 644,036 tons in 1955. This was 75,246 tons less than in the previous year and is consistent with the lower total tonnage of cane ground. The percentage of farmers' canes to total canes remained at approximately the same level.

16. As in recent years, the local consumption quota was fixed at 23,000 tons of sugar, which included sugar used in the manufacturing industries both for home consumption and for export.

17. Sugar exports during 1956 totalled 137,373 tons, of which 19,561 tons were shipped to Canada and the remainder to the United Kingdom.

18. Shipments in bulk amounted to 106,580 tons (of which 18,761 tons went to Canada) compared with bulk shipments of 105,979 tons in 1955. The system was further extended in 1956; for bulk shipment was adopted by two additional companies who shipped almost their entire export Greys through the bulk handling installation of Caroni Limited at Goodrich Bay.

19. The price of Negotiated Price Quota sugar has been increased by £1. 8s. 4d. (\$6.80) to £42. 3s. 4d. (\$202.40) per ton for the 1957 crop. This related only to that part of our export production which is covered by guaranteed prices negotiated annually under the Commonwealth Sugar Agreement, the remainder of the export sugar being sold at prices ruling on the world market at the time of sale. New Zealand, which since the commencement of this Agreement has purchased sugar from the Commonwealth countries at guaranteed negotiated prices, has now terminated this arrangement; the effect of which is a reduction in the Trinidad 1957 Negotiated Price Quota by 5,578 tons to 119,000 tons.

CACAO

20. Cacao exports amounted to 194,971 cwt. valued \$10,485,241 as compared with 146,962 cwt. valued \$11,773,390 in 1955. The export value of raw cacao in the last six years is shown in Table VIII.

21. Good progress can once more be recorded for the rehabilitation of the industry by means of the Cocoa Subsidy Scheme. Details of plants distributed are shown in the section of this report dealing with the activities of the Cocoa Board.

CITRUS

22. The total value of all citrus products exported was \$2,647,058 as compared with \$2,953,098 in 1955.

23. The output of fresh fruit and canned products by the Citrus Growers Association is shown in Table III.

24. It will be seen that the Association exported 104,213 crates of fresh fruit, 377,312 cartons of canned juice, while 125,222 cartons of A2 cans of juice were sold locally. They also produced 2,071 long tons of dehydrated citrus pulp meal for stockfeed.

25. The production of limes continues to decline.

26. A survey of the citrus industry was conducted with the help of the Extension Division on established citrus orchards over half an acre in size.

27. In accordance with this survey the total acreage of grapefruit grown in Trinidad is given as 4,604, orange 4,870, lime 799 and other citrus types 156. The total of each age group for grapefruit and orange, and the percentage of each age group of the total acreage in orange and grapefruit, are given in Table IX.

28. The distribution of orchards in accordance with acreage groups is shown in Table X.

29. The percentage of the total number of orchards for each acreage group and the percentage acreage of each of these groups to the total acreage are shown in Table XI.

30. The Co-operative Citrus Growers' Association purchased a total of 508.5 tons of fertilizers at a cost of \$60,720.96 during 1956. Sales totalled 523.2 tons costing \$62,440.83.

COCONUTS

31. The total value of all exports of coconuts and their derivatives amounted to \$1,340,161 as compared with \$1,903,586 in 1955.

32. The spread of Red Ring Disease was alarmingly great, and the services of a Nematologist were obtained for preliminary investigational work, (*vide* para. 186).

BANANAS

33. Exports of bananas continue from this Colony to the United Kingdom under the 15-year contract with Union International, which came into force in 1955. Twenty-two shipments totalling 214,341 bunches were made in the course of the year. This is a record for banana shipments since the resumption of the trade after the Second World War. Bananas are mainly of the Cavendish variety and are shipped at the $\frac{3}{4}$ full grade. The average weight of a bunch is 33 lb.

COFFEE

34. Coffee prices during the year ranged from 45c. to 65c. per lb. Exports of raw coffee were 29,436 cwt. valued \$1,571,566 as compared with 29,505 cwt. valued \$1,727,264 in 1955.

TONCA BEANS

35. The price obtained by producers ranged from 90c. to \$1.20 per lb. The amount exported was 184,286 lb. valued \$324,838 as compared with 119,176 lb. valued \$157,200 in 1955.

RUBBER

36. One hundred and twenty-nine thousand five hundred and sixty-eight lb. of raw rubber valued \$71,202 were exported as compared with 15,780 lb. valued \$10,501 in 1955.

WORK OF THE DEPARTMENT OF AGRICULTURE

37. This section of the report summarises the activities and achievements of the Department of Agriculture. Fuller details in unpublished reports of individual officers are available, and enquiries regarding any particular aspect of the work will be welcome.

Extension

38. The following services were undertaken by the Department's Extension Division during the year:—

- (a) general advice to the public on agriculture;
- (b) inspection visits to school gardens for advice and judging, in connection with the annual field competitions;
- (c) supervision of over 10,000 acres of Food gardens;
- (d) inspections and allocation of Crown land and the preparation of detailed programmes of work for applications under 3-year probationary agreements leading to a 25-year lease;
- (e) assistance and support to agricultural organisations, agricultural exhibitions, field and livestock competitions;
- (f) supervision of 17 Land Settlements;
- (g) supervision of 24 Breeding Units;
- (h) supervision and management of district Demonstration Stations;
- (i) parasol ants destruction on Crown lands;
- (j) crop surveys and collection of district information;
- (k) assistance to the Rice Division in the distribution of pure line seed paddy to farmers;
- (l) implementing the internal legislation for plant protection.

39. District Demonstration Stations are maintained at Sangre Grande, Rio Claro and Penal, in Trinidad, and at Louis d'Or in Tobago. The objects of these stations are:—

- (a) to ascertain suitable systems of mixed farming for application to peasant agriculture;
- (b) to demonstrate methods of crop production and livestock management which the peasant could copy;
- (c) to be centres for the distribution of seed, planting material and stock;
- (d) to be local headquarters of the Department of Agriculture.

40. A survey of the 1955-1956 accounts of the El Reposo Demonstration Station was undertaken by Dr. A. L. Jolly, Lecturer in Economics at the Imperial College of Tropical Agriculture.

41. The analysis indicated that unless there was a change in the policy and operation of stations they would continue to be run at a financial loss, in view of the many public services rendered at uneconomical prices.

42. It was consequently decided, as part of a long term policy for these stations, to evolve and finally to demonstrate profitable small farm prototypes, suitable to the particular conditions of the area which the station serves. The policy will take many years to operate efficiently and, moreover, the establishment of such unit farms will call for considerable capital investment.

43. By the end of the year, however, a start had been made with a unit cacao farm at El Reposo on which a peasant's house was constructed and in which were incorporated fermenting and drying facilities. The unit was established on an existing old cacao area comparable with much of the peasant farmers' land in the vicinity.

44. Plans are also laid for other types of farms, viz. poultry, pig, citrus, cattle; but their eventual establishment must await the experience gained in working the unit cacao farm.

45. Other features of the work on district stations and breeding units were the rehabilitation of some 34 acres of old cacao; the replanting at Louis d'Or Station by clear felling one acre of cacao, keeping accurate costings; the erection of Malayan copra driers at Louis d'Or and Cedros and the construction of a hostel in Tobago for the training of rural youth in agriculture.

46. At the beginning of the year, 17 Land Settlements, formerly maintained by the Land Settlement Division, were brought under the supervision and control of the Extension Division for purposes of co-ordination. A survey of these settlements was undertaken with the view of providing the facts on which improvement programmes can be based.

47. A survey of the citrus industry conducted with the help of the Extension Division contributed useful information, essential to planning further improvements in the field (*vide* paras. 26-29).

48. A survey on market gardens undertaken during the year will help to indicate the trends in acreages devoted to the various crops grown by market gardeners.

49. The banana industry continues to receive special attention and several field days were held in districts and villages. By the end of the year there were 62 plots on selected farmers' holdings, and these illustrated the value of good cultural practices in banana cultivation.

50. In Tobago a Land Use Subsidy Scheme started in 1954 made satisfactory progress. In this scheme, farmers are given a subsidy for work done on their holdings. Its real value lies in the interest in soil conservation that is being aroused among the farming community of Tobago.

51. The Campaign for the control of Witches' Broom Disease has been restarted in Tobago (*vide* para. 103).

52. Table XII shows the position with regard to tenants on Crown lands. During the year 214 acres were allocated and settled, while 144 acres were leased and an additional 340 acres were recommended for probationary agreements.

53. The general pattern of Crown land distribution is shown in Table XIII.

54. Revenue derived from this Division amounted to \$54,043.72 as compared with \$48,005.41 for 1955. Expenditure was \$218,061.80 as compared with \$214,570.14 in 1955.

Central Experiment Station

55. *General*—The Research Division was affected by two resignations among the senior staff.

56. Investigational work continued on the main plantation crops including agronomic studies and pest and disease control. Legumes and fodders continued to receive attention. Pastures are being expanded with promising grazing grasses.

57. The banana nurseries again supplied planting material of the Cavendish type to prospective growers.

58. *Outline of Investigations*—The agronomic and pest disease investigations are briefly outlined below:—

- (a) *Sugarcane*—Variety trials; lime fertilizer trials; multiplication and distribution of newly bred sugarcane varieties, mostly originating in Barbados; moth borer studies.
- (b) *Cacao*—Evaluating the performance of various cacao clones on different soil types; shade, spacing and fertilizer trials with clonal cacao; cultivation experiments; hybridization between heavy bearers and witches' broom resistant clones and selection of progeny combining these qualities; cacao processing and artificial drying; low volume spraying trials for the control of Black Pod Disease, *Phytophthora palmivora*; trials on the type of container for growing rooted cuttings; trials with various artificial shade materials for cacao propagating stations.
- (c) *Fruit Crops*—Most of the investigations were on citrus and consisted of rootstock, manurial and management trials; hormone spraying for holding of fruit on trees; epiphyte control on grapefruit; investigation of citrus Melanose and greasy spot diseases; investigation of seedling lime disease; citrus nursery studies; observations on varieties of pineapples, guavas and other tropical fruits; propagation techniques for mangoes.
- (d) *Coconuts*—Evaluation of selections for seed nut production; special basic studies concerning the mode of infestation of the Red Ring nematode by Dr. D. W. Fenwick, Nematologist from Rothamstead; control of the palm weevil.
- (e) *Bananas*—Observations on suckering; low volume spraying with oil-based fungicides for control of Leaf Spot Disease; control of Moko Disease; control of the banana weevil borer.

- (f) *Rice*—Variety trials; investigations on photo-periodism; selections for yield; observations on lodging; survey of moth borer damage; soil surveys of the potential rice growing areas.
- (g) *Fodder*—Observations on pasture grasses and grazing trials; pasture management.
- (h) *Soil Survey*—Survey of Southern Trinidad; special surveys in the Nariva Swamp and in the Le Monte Section of the Fishing Pond Rice Expansion Scheme; analyses of soil samples; soil erosion investigations on various watersheds and under diverse cropping systems.
- (i) *Other Pest Investigations*—Stored products; parasol ants; mealy bug on pineapples; sweet potato borer; other pests of vegetables.
- (j) *Other Plant Disease Investigations*—Virus disease of cacao; sderotium wilt of Russian Comfrey; bacterial wilt of tomatoes.
- (k) *Irrigation of Grass Land*—Investigation of fodder, stool forming and grazing grasses under sprinkler irrigation systems; fertilizer distribution through the irrigation system.

59. Field experiments were also conducted off the station where different conditions of soil or climate made this course desirable.

St. Augustine Station

60. *Weather*—The dry season, though not severe, was unusually prolonged. It was necessary to use irrigation on field crops up to August but in spite of this, plant growth was considerably retarded.

61. *Citrus*—Because of adverse weather conditions, it was not possible to start lifting citrus plants before August. A total of 95,303 plants were distributed as follows:—

Grapefruit	...	...	...	24,350 plants
Oranges	...	...	...	63,857 „
Other citrus	...	...	...	7,096 „
				95,303 plants

62. It is now the policy to encourage the planting of pink-fleshed grapefruit. Accordingly, the Station produced 9,000 plants of the varieties "Thompson" and "Ruby". From these, 2,187 plants were distributed and the remainder left as "standovers" for distribution in 1957.

63. Approximately 1,000 Ortanique plants were grown and distributed for the first time.

64. A 15-acre block of the grapefruit orchard, which had ceased to give economic returns because of senility was grubbed to make room for the extension of the citrus nursery.

65. Orders received for 1957 have decreased. These amounted to 163,000 plants (240,000 in 1955; 300,000 in 1954). It is anticipated that the Station will produce 100,000 plants in 1957 and this should be sufficient for actual demands.

66. *Avocado*—Production was 15,000 plants (12,687 in 1955). All demands were met by the distribution of 14,298 plants.

67. *Mango*—Five thousand seven hundred and two plants were distributed (7,198 in 1955). Demand still exceeds that which the Station can supply; the chief limit to increased production being the availability of scion material. A small orchard of mangoes is, however, being planted to make more trees available for inarching, and it is hoped that this measure will achieve the desired increase in production.

68. *Breadfruit*—The propagation and distribution of breadfruit plants have started. Over 2,000 plants were distributed during the year.

69. *Vegetable and Ornamental Plants*—The Station has continued its effort to meet the great demand for seedlings of vegetable and ornamental plants. A total of 18,422 boxes were distributed. Comparative figures for the years 1953 to 1956 are given in Table XIV.

70. The demand for decorative trees and shrubs continues to increase. Over 56,000 plants were distributed and this amount was insufficient to satisfy demands.

71. *Planting Material of Field Crops*—Maize, yams and pigeon peas were produced on the Station and sold as planting material. Production was as follows:—

Maize	...	...	...	...	8,120 lb.
Pigeon peas	...	...	...	...	1,165 ,,
Yam	...	...	...	...	40,460 ,,

72. *Orchard Crops*—Nineteen acres of grapefruit and five acres of oranges were cultivated from which 7,738 crates of grapefruit and 1,514 crates of oranges were produced.

73. *Vegetable Garden*—A vegetable garden was maintained, surplus seedlings being used for the establishment of cultivations. Crops produced are sold to the public.

74. Sun Hemp, Woolly Pyrol, Tephrosia and Cow Peas were grown as cover crops to improve the soil and to maintain stocks of seeds for distribution.

75. *Irrigation System*—A new irrigation system was installed towards the end of the year. It consists of an electrically powered centrifugal pump and mobile lightweight aluminium pipes with sprinkler nozzles. This system replaced the old equipment which no longer functioned satisfactorily.

Royal Botanic Gardens

76. *Exchange of Planting Material and Information*—The Royal Botanic Gardens carry on an exchange of planting material and information with botanic gardens and scientific institutions throughout the world. Requests were received from such countries as Russia, Finland and Australia. About 300 packets of seeds were supplied in answer to 46 requests.

77. *Introductions*—The following introductions were planted:—

1. *Calamus kiporium*
2. *Pinanga kuhlii*
3. *Hyophorbe verschaffelti*
4. *Hoya australis*
5. *Clivia miniata*
6. *Cyrtostachys lakka*
7. *Hippeastrum aulicum*
8. *Ixora chinensis*—three different colours
9. *Tabebuia pallida*
10. *Aspidium nidus-avi*
11. *Platyserium bifurcatum*

78. *Replacements*—Old trees which have died in recent years have been replaced. They are as follows:—

- (a) *Pimenta acris*
- (b) *Cinnamomum zeylanicum*
- (c) *Cupressus sempervirens pyramidalis*
- (d) *Thuya orientalis*
- (e) *Ptychorhapis angusta*
- (f) *Cassia javanica*

80. *Orchid Collection*—The orchid collection is receiving greater attention. Five *Cattleya* hybrids have been added. In response to requests from tourists and the public, it is proposed to make a complete collection of local orchid species. Some progress has already been made in this direction.

81. *Decorative Annuals*—Decorative annuals were successfully tried this year. Alyssums, Asters, Dwarf Marigolds, Dianthus and seedling Dahlias all gave good results.

82. *Public Parks*—Three old trees were removed from the Queen's Park Savannah and fifteen planted.

Sugar Cane

83. At the Central Experiment Station, 69.48 acres of cane were reaped yielding 2,303.85 tons, or 33.16 tons per acre. Of the total, 246.75 tons were from burnt canes. Continuous rains during the dry season made harvesting expensive and difficult, and considerable damage was done to cane stools by trucking over rain soaked beds.

84. Approximately 14.16 acres were planted, including two variety trials. One trial containing the 25 varieties of the Barbados 1952 series, and four Australian varieties. A large number of multiplication plots were also planted.

85. Eighteen varieties of the Barbados 1954 series, were received from the British West Indies Central Sugarcane Breeding Station, Barbados.

86. Over 64,460 plants of the various varieties in stock were distributed to sugar estates for further multiplication and trial.

87. Twenty-three variety trials were reaped during the year; 17 by the Ste. Madeleine Sugar Co. and six by the Department of Agriculture.

88. The varietal position during the year is given in Table XV which shows the percentage of each variety reaped of both the total acreage and of the plant cane acreage on estates.

89. It would be seen that B. 3337 and B. 37172 have remained in first and second place respectively. While B. 37161 retains third place and B. 41227 has moved up from fifth to fourth. B. 34104 continues to decline. The largest advance is shown by B. 41227 from 3.6 per cent. in 1955 to 8.7 per cent. in 1956.

90. Table XVI shows sugar cane varieties as a percentage of plant cane acreage reaped on estates during 1956. B. 37161 leads with 34.38 per cent. while B. 41227 is in second place with 23.15 per cent. which shows considerable gain on 9.3 per cent., the figure for 1955. There is however, a reluctance on several estates to favour this variety on account of its juice quality.

91. A moth borer survey was carried out from April, 1955 to January, 1956, at the Central Experiment Station on five different varieties.

92. A highly significant correlation between yields and percentage borer infestation in varieties B. 37172 and B.H. 10/12 was recorded, as shown in Table XVII.

Cacao

CLONAL AND FERTILIZER TRIALS—ESTATES

93. Field experiments comprising both clonal and fertilizer trials continued to be maintained. No new trials were planted. Yield data will be available next year.

BREEDING AND SELECTION FOR WITCHES' BROOM RESISTANCE

94. Yield recording and breeding work continued at Marper. A detailed examination of the block planted with seedlings in 1950 revealed that many of the trees, which show considerable resistance to Witches' Broom, are promising. Provisional selections number 160. These will be multiplied as clones and tested in field trials.

95. Over 9,000 hybrid seedlings produced at Marper were planted at La Chaguaramas (Central Experiment Station). This brings the total number of hybrid seedlings planted at La Chaguaramas to over 22,000. Individual tree records are being kept on all trees to assess their resistance, yield and pod characteristics.

SPRAYING TRIALS

96. Spraying trials were continued at Perseverance Estate to test the value of low volume spraying with Perenox, at intervals of four and six weeks, to control Black Pod and Witches' Broom. Results indicate that regular sprayings, where Black Pod is severe, will give an increase of 200 lb. of dry cacao on clonal material.

97. A new trial was also started to test Perenox and Orthocide at $1\frac{1}{2}$ to 3 lb. per acre respectively, applied every four weeks.

TRIALS ON TYPES OF CONTAINERS FOR GROWING ROOTED CUTTINGS

98. Trials are in progress for testing the type of containers for growing rooted cuttings. Treated baskets (locally manufactured), compressed soil pots, paper pots (whalehide) and chicken wire pots are under test. The method of rooting the cuttings *in situ* in a container has resulted in a 10 per cent. increase in production efficiency and a decrease of 15 per cent. in the cost of production over 1955.

INSECT PESTS

99. *Leaf eating beetles, Cetonia arcuata*—These insects set back the growth of young clones, newly planted on an estate in the Brazil district. A mixture of B.H.C., linseed oil and Teepol gave complete control.

100. At an estate in Siparia, defoliation by *Geometrid* caterpillars on old trees attracted some attention. Rehabilitation or fertilizer treatment was recommended instead of uneconomic spraying against this pest.

VIRUS DISEASE

101. Routine inspections were carried out at La Pastora, La Reunion, Marper, El Palmiste, Ste. Marie and Non Pareil Estate propagators, but no virus infected plants were discovered at these points.

102. At Mon Valmont Estate Propagator, 12 virus infected plants were found. At Big Amadee Field, Non Pareil Estate, 81 virus infected trees were discovered and cut out together with 214 contacts. Inspection on an estate at Plum Mitan revealed that 13 trees showed typical symptoms of virus disease. This is the first record of the disease in an area outside the Northern Range and Non Pareil Estate. Re-inspection later in the year revealed no further cases.

103. *Witches' Broom Disease*—*causative organism, Marasmius perniciosus*—The campaign for the control of this disease has been restarted in Tobago by the Extension Services. Dramatic results should not be expected; but by including the removal of infected tissue as a normal cultural practice, the incidence of the disease will be reduced considerably.

104. *Rosellinia Root Disease*—*causative organism, Rosellinia spp.*—Two outbreaks of this disease with old seedling cacao were reported from Tobago. An outbreak also occurred in clonal cacao at an estate at Gran Couva. The removal of diseased roots, the creation of good drainage together with other measures to promote healthy and vigorous plant growth were recommended.

105. *Pod Disease*—*Black Pod, causative organism Phytophthora palmivora and Witches' Broom, causative organism Marasmius perniciosus*—Two trials are in progress, one in Sangre Grande and the other in Rio Claro, to test the use of low volume sprays with oil and water for the control of pod infections.

Cacao Subsidy Scheme (Administered by the Cocoa Board)

PRINCIPLES

106. During the year the Board considered long term financing of the Cocoa Subsidy Fund in relation to the fact that present expenditure exceeded revenue. The Board recommended to Government that the Alternative Subsidy Scheme should cease as from 1957.

107. Government Notice No. 152, which allowed for the cessation of alternative crop subsidy was, accordingly, approved by the Governor in Council in October, 1956. No new programme will, therefore, be considered after 1st January, 1957 and any programme not commenced by 31st December, 1957 will be cancelled.

108. *Rehabilitation*—The Board received 1,083 applications for rehabilitation subsidy. The total approved was 848. This brings to 5,714, the total number of applications received since the inception of the Scheme, and to 4,673 the total number approved.

109. The total approved applications for the years 1953-1956 were divided among properties as shown in Table XVIII.

110. Applications were received for deliveries of clonal plants amounting to 2,193,506 in Trinidad and 270,226 in Tobago. Comparative figures for demand and allocation of clonal plants for the years 1953-1957 are given in Table XIX.

111. Of the plants distributed during the year 1,040,693 were delivered to planters and 46,127 utilised for nurseries and experimental work as compared with 654,219 and 40,226 in 1955. This distribution to planters represents the treatment of 5,151 acres of which 1,481 were completely replanted and 3,670 acres were partially replanted.

112. Figures showing the distribution to planters by varieties are given in Table XX.

113. The sum of \$206,302.05 was paid out in subsidy for cacao planting during the year.

MANURING SUBSIDY

114. From 1952, the Board has been granting a Manuring Subsidy in the form of a free issue of fertilizer to planters of clonal cacao. A total of 1,987 planters were supplied with 1,331 tons of fertilizer. Comparative figures for the years 1952-1956 are given in Table XXI.

REPLACEMENT OF CACAO BY ALTERNATIVE CROPS

115. Again, there was a decrease in the number of applications for subsidy. Only 76 were received, as compared with 621 in 1954 and 119 in 1955. Fifty-three applications were approved.

116. The total applications received and approved from the inception of the Scheme to the end of 1956 were 3,287 and 2,766 respectively.

117. The total approved applications for the years 1953-1956 were divided among proprietors as shown in Table XXII.

118. During the year assistance was approved to plant 36.9 acres of citrus and 119.8 acres of coffee. The sum of \$26,291.85 was paid as subsidy for the replacement of cacao by other crops.

PROPAGATION

119. The average production efficiency of the Board's stations was 64 per cent. during 1956 (46 per cent. in 1955). Central stations had an efficiency of 65 per cent. (47 per cent. in 1955) as compared with 57 per cent. (44 per cent. in 1955) on estate propagators.

120. This increase in production efficiency is due to a general adoption of the pot rooting technique, which consists of rooting cuttings *in situ*, in baskets, using a half coir of coconut bass residue. On estate propagators, the lower production efficiency was mainly due to the later introduction of the pot rooting technique.

121. The pot rooting technique is now the standard method of cacao propagation in the colony.

122. Plant losses after rooting are still high. This was mainly caused by the general use of bamboo slats as overhead shade. With slats, there is considerable mechanical damage to the young flush through concentrated water run off. Infection of *Phytophthora palmivora* follows and results in the complete loss of, or severe damage to, the young flush. Considerable control of this attack has been effected by utilising copper oxide sprays.

PROPAGATING STATIONS

123. *La Pastora*—Production was 393,127 plants with a production efficiency of 60 per cent. (412,965 with a production efficiency of 48.5 per cent. in 1955).

124. Repairs and modifications commenced in 1954 were, to a large extent, completed in 1956. All units now have concrete floors; five new glass houses were erected and access roads surfaced. The sum of \$53,286.91 was spent on this construction work during the year. The capital valuation of the station at 31st December, 1956 was \$440,357.11.

125. Some 7,052 plants were set out in old nurseries during the year (6,706 in 1955). The total number of plants in nurseries at the end of the year was 56,329.

126. *La Reunion*—During the year further sheds were constructed for the storage of soil and manure. This construction work amounted to \$37,411.76. The capital valuation at the 31st December, 1956 was \$738,903.26.

127. This station was in full production during the year, its output being 484,129 plants with a production efficiency of 73 per cent. (238,206 with a production efficiency of 43 per cent. in 1955).

128. A total of 12,901 plants were established in new nurseries. The number of plants in nurseries at the end of the year was 55,439.

129. *Marper*—The sum of \$2,747.99 was spent on recovering sheds. The capital valuation at 31st December, 1956 was \$31,897.91.

130. Output for 1956 was 60,699 plants with a production efficiency of 54 per cent. (53,637 with a production efficiency of 44 per cent. in 1955).

131. A total of 1,282 plants were established in nurseries in 1956. The total number of plants in nurseries at the end of the year was 17,207.

132. *Louis d'Or*—Construction was completed in April, 1956. The sum of \$126,146.77 was spent on construction work during the year. The capital valuation at the end of the year was \$217,610.37.

133. Operation was commenced in August, 1956, and by the end of the year 20,234 plants were produced with an efficiency of 90 per cent. The total of 9,521 plants were set out in nurseries at the end of the year. The total number of plants in nurseries at the end of the year was 19,359.

134. *King's Bay*—Operation of this station ceased in October, 1956, and the area leased for nurseries was handed over to its owner. The output was 48,177 plants with a production efficiency of 59 per cent. (44,400 with a production efficiency of 41 per cent. in 1955).

ESTATE PROPAGATORS

135. One new estate propagator (assisted type), of 10,000 plant capacity, was constructed at the Gordon Forbes Estate, Sangre Grande.

136. The assisted propagator of 15,000 plant capacity at Lure Estate, Tobago, the construction of which started in 1955, was completed.

137. During the year the Board decided to construct no further estate propagators as it considered that, with the main stations in full operation, the full demand for plants could now be met.

139. At the end of the year there were 18 Assisted Estate Propagators in operation. Their output totalled 219,788 plants, with a production efficiency of 57 per cent. (152,926 plants with a production efficiency of 44 per cent. in 1955).

140. A total of 10,723 plants were established in nurseries and estate propagators during the year.

COST OF PLANT PRODUCTION

141. The cost of production was reduced by the general adoption of the pot rooting technique (*vide* para 120) and the figures given in Table XXIII show the cost of producing one plant from the years 1953-1956.

Fruit Crops

GENERAL

142. Investigations were conducted mainly on citrus fruits. In addition to the maintenance of long term citrus experiments, two manurial trials were started, one on oranges and the other on grapefruit.

143. A pilot nursery for producing citrus plants on a commercial basis was started.

144. A survey of citrus orchards in the Colony was carried out with the help of the Extension Division.

145. Investigations were carried out on the propagation of mangoes and some selection work was done on guavas.

ROOTSTOCK AND MANAGEMENT TRIAL

146. The management trial was suspended for the year and an effort was made to eradicate Para Grass which had overrun all the plots. The field was subsequently rotary-hoed. Experimental treatments are to be resumed.

147. Measurements for girth were taken of stock and scion on all experimental trees and records of yields from each plot were kept. Because of wide variation among the experimental trees at this stage, differences between plots cannot be attributed, definitely, to rootstock or management.

TRANSPLANTING TRIALS

148. With the object of determining the practicability of transplanting citrus plants "barerooted", five trials were established at different parts of the island. A randomised block design was used with two treatments—plants set "barerooted" and plants set "en pilon".

149. Records are kept of cost, and of survival at four weeks, three months and twelve months. In addition, observations will be made on vigour, precocity and yields.

150. In the five trials, no significant differences were found between the two treatments with regard to survival and vigour.

151. Four of the trials have been discontinued and one is being maintained on the station for observations on precocity and yields.

TREE MANAGEMENT TRIALS

152. There are three trials on tree management. One is to determine the effect of heading and training; the other two are designed to obtain information on the optimum height for bud insertion, and of head formation. Measurements with regard to girth of stock and scion were taken and observations on appearance recorded. The trials are three years old. When the trees are in full bearing, performances of the different treatments will be compared.

FIELD MANAGEMENT TRIALS

153. Experimental treatments were applied to two tree management trials—one on the station and the other on a private orchard. Soil and leaf samples were taken for analyses and records were kept on plot yields. It is still too early to assess differences between experimental treatments.

ORANGE HARVESTING TRIAL

154. This trial was run for the third year. Spray treatments of three hormones were applied and dropped fruits were collected and recorded. Unfortunately, praedial larceny of fruits from experimental trees may vitiate results.

EPIPHYTE CONTROL ON GRAPEFRUIT

155. Investigations on the control of epiphytes on grapefruit trees by the use of "hormone" herbicides were continued. A concentration of fifty parts per million of 2,4 dichlorophenoxyacetic acid was sprayed twice during the year. The incidence of epiphytes was recorded for each tree; before spraying and one month after. It was found that the spray was effective against bromeliads and mosses, but other epiphytes were resistant.

ORANGE AND GRAPEFRUIT MANURIAL TRIALS

156. There were two manurial trials—one on orange and the other on grapefruit. In these trials, it is planned to demonstrate the effects of citrus fertilizers, commercially available, and to estimate their economic potential. The treatments are:—

1. No fertilizer.
2. Sulphate of Ammonia.
3. Sulphate of Ammonia + Fritted Trace Elements.
4. Complete N.P.K. as recommended by the Soil Chemist.
5. Albatross 15.10.10 without minor elements.
6. Albatross 15.10.10 with minor elements.

157. The grapefruit trial, planted three years ago, had its first application of these fertilizers. The orange trial was planted during the year.

CITRUS COLLECTION

158. The citrus collection now has 34 edible and 24 inedible varieties.

CITRUS NURSERY

159. A total of 3,859 successful buds were put on Sour orange, Cocoa orange, Rough lemon, Cleopatra mandarin, Dominica wild grapefruit, and Rangpur lime. Satisfactory percentages of successful takes were obtained on Sour orange, Rangpur lime, Dominica wild grapefruit and Rough lemon. Under 50 per cent. successful takes were obtained with Cleopatra mandarin and Cocoa orange.

160. A pilot nursery for producing citrus plants on a commercial basis was started. A total of 20,000 seedlings of citrus rootstocks were transplanted. Budding will be started early in 1957.

PINEAPPLE OBSERVATION

161. The pineapple observation plots started about a year ago with different varieties of pineapple, are beginning to fruit. When sufficient fruits are available from each variety, tests will be made to determine its suitability for the fresh fruit and canning trade.

PLANT PROPAGATION

162. Investigations were carried out on the propagation of Julie mangoes in the glasshouse and in the field. In the glasshouse, several methods of grafting and budding upon rootstocks in bamboo pots failed, except a side graft on rootstocks six weeks to three months old. In the field, some success was obtained from saddle grafts and patch buds on rootstocks over eighteen months old, and from side grafts on rootstocks six weeks to three months old. It is proposed to continue these investigations on a larger scale.

GUAVA SELECTION

163. From a fairly large field containing different varieties of guavas, selection was made for flavour and gelling properties. Plants will be propagated from the selected trees for establishing an orchard.

TROPICAL FRUIT MUSEUM

164. This museum now has a total of 71 varieties of tropical fruits. During the year Cashew, Suriname Cherry, and Seedless Pomerac, fruited.

SUB-TROPICAL FRUIT MUSEUM

165. There are eight varieties of sub-tropical fruits in this museum. Recent additions were Talisman strawberry and some apple trees.

DISEASES

166. *Melanose Spotting of Grapefruit (causative organism Diaportha citri)*—It is now apparent that this disease is fairly widespread in grapefruit and causes the rejection of fruit for export, which is high in certain areas.

167. Results of a pruning and spraying trial harvested during the year indicated that the pruning of dead wood and twigs, which provide a source of infection, significantly reduced the incidence of spotting. Spray treatments were not effective. This is attributed to the heavy rains at the time of spray application.

168. It is proposed to carry out further trials in the coming year with the use of low volume sprayers with oil or water based sprays.

169. Pruning of dead twigs, which is a good cultural practice, must in any event be carried out if the disease is to be controlled.

170. *Greasy Spot*—In the past, this has been attributed to the poor nutrient status of the plant. During the year, a visit was paid to Trinidad by Dr. A. F. Camps, Vice-Director of Florida Agricultural Experiment Station. He indicated that recent work has shown that the condition is due to unclassified fungi. It is hoped to carry out investigations on Greasy Spot during the coming year.

171. *Seedling Lime Disease*—In an experiment at Toco, the effect on old seedling trees of enarching with different rootstocks is being investigated. It is still too early to assess results.

Bananas

PLANTING MATERIAL AND NURSERIES

172. Further distribution of planting material from the nurseries established at Golden Grove was made. A total of 86,723 plants was distributed. The demand for plants continued to be high and it was necessary to import suckers from St. Lucia.

DISEASES

173. *Leaf Spot Disease (causative organism Mycosphaerella musicola)*—Experiments at the Central Experiment Station have demonstrated that low volume, oil based sprays are more efficient and cheaper than high volume, water based sprays in the control of this disease.

174. Experiments have also demonstrated that the oil has fungistatic properties, and reduces the development of spots in leaves which have already been infected.

175. There is also an indication that it is possible, under certain conditions, to control the disease by the use of oil alone without the inclusion of a fungicide.

176. *Moko Disease* (causative organism, *Pseudomonas solanacearum*)—In a trial laid down on the El Reposo Demonstration Station, results, up to the present, indicate that certain cultivation and treatments applied to infected soil will allow replanting without loss, for a period of, at least, one year. These treatments include proper drainage, soil fumigation and the application of lime. Only four plants have, so far, been affected by Moko Disease, and these were in plots which had not received the treatments.

PESTS

177. Advice was given on pest problems at estates in Sans Souci, Brasso and Pointe-a-Pierre. The serious limiting factor to successful establishment was found to be the borer weevil, *Cosmopolites sordidus*, Germ. Preventive treatment before planting by paring away infective material and immersing suckers in a solution of Aldrin, together with treatment, after planting by spraying round the base of plants at six monthly intervals with Dieldrin were recommended.

178. The hard back beetle, *Lygynus ebenus*, Degeer, and rhinoceros beetle, *Strataegus anachoreta* (Bur.) also burrowed into the suckers. They were kept in check by the old method of pouring oil into their burrows and spearing the adults with wire as they emerged. The treatment recommended in the paragraph above for borer weevil would help considerably to reduce the number of these insects.

179. The boring caterpillar, *Castnia licoides*, (Boisd.), which is normally a pest of sugar cane, attacked the central stem of bananas. Control was suggested by Dieldrin spraying, at more frequent intervals than for the borer weevil, application being made higher up the plant.

180. It has been shown at the Central Experiment Station and El Reposo Demonstration Station that borer weevil infection does not normally appear until, at least, a year after borer free suckers are planted. Moreover, the risk of borer infection is higher when larger suckers are used.

181. It was also found that the application of a low quantity of high concentration Dieldrin gave better control than a high quantity of low concentration Dieldrin, which is the favoured treatment in other countries.

Coconuts

182. Selected seed nuts from high yielding parent trees growing on local estates as well as importations from Ceylon were planted in an isolated ten acre block at the Central Experiment Station. The soil type is not well suited to coconuts but it is hoped, in due course, to collect a reasonable quantity of superior seed nuts from this cultivation. The first batch of nuts were harvested in November and yields have been recorded. Criteria for selection were based on habit of tree, including radial arrangement of branches; size of nut; meat of nut; and annual output of nut. At a later stage, final selection criteria will also include the percentage of oil in copra.

183. In the meantime the trial has been duplicated, to a certain extent with nuts of local origin on a coastal strip of more suitable soil at Tairico Bay.

ADVISORY WORK

184. An estate in Blanchisseuse experienced losses in both young and mature trees. Bad field sanitation and poor drainage contributed to this together with the presence of Red Ring Disease and the Palm Weevil. Suitable recommendations were made.

185. Inspections were made and advice given to several estates in the Cedros area which have been experiencing severe losses of mature trees because of ill balanced water relationships.

PESTS AND DISEASES

186. *Red Ring Disease (causative organism *Aphelencooides cocophilus*)*—In the early part of the year, the services of Dr. D. W. Fenwick, Nematologist of Rothamstead Experiment Station, England, were made available for three months to study Red Ring Disease in Trinidad and Tobago. Dr. Fenwick concluded from his investigations that the main source of infection of the disease was from the soil and that the nematodes entered the stem through the roots. Weevils, in his opinion, were only of minor importance in the spread of this disease. Nevertheless, he expressed the view that they might be a major pest in their own right, as a weevil attack was probably fatal whether Red Ring was present or not. He also pointed out that infection might occur by way of seed nuts; as several drop nuts, which were being used for planting, were found to contain soil nematodes and three of these also contained *A. cocophilus*.

187. His assessment of the damage caused by Red Ring over the whole Colony indicated that in ten to twelve years time, copra production will fall by about 20-25 per cent. if the disease proceeds at its present level.

188. In view of Dr. Fenwick's findings concerning the improbability of Red Ring Disease being spread by weevils, an experiment, previously laid down at Manzanilla to ascertain this point, was discontinued.

189. *Wilt Disease*—Large numbers of coconut trees are dying out in the Valsayn district because of Bronze Leaf Wilt or a similar physiological condition existing in soil unsuitable for coconut cultivation.

Rice

RICE EXPANSION PROGRAMME

190. *Plum Mitan and Fishing Pond Rice Expansion Schemes*—The Works and Hydraulics Department are still engaged in the internal developments of these schemes. Roads are being built; internal drains, irrigation canals and access paths are being constructed in the fields on a contour basis and the construction of the control sluice gates are underway. It is anticipated that these works will be completed in 1957.

191. A total of 75 acres was rented to farmers on temporary and seasonal agreements at Plum Mitan and 25 acres at Fishing Pond.

192. The areas of paddy actually planted were 35 acres at Plum Mitan and 25 acres at Fishing Pond.

193. *Caroni Savannah Scheme*—The main drainage works, which were completed in 1954, are still being maintained by the Works and Hydraulics Department. Future developments of these schemes depend upon further engineering and agricultural investigations.

194. Soil samples continued to be taken each month to determine the leaching of chlories.

195. *Central Experiment Station Paddy Fields*—An area of 11½ acres was used for experimental purposes and rice selection work. Eight acres were cultivated with dry season crops. Insects were again extremely troublesome and losses were also sustained by flooding.

196. An area of 110 acres was cultivated in the wet season for the purpose of seed multiplication.

197. The land was harrowed in the dry season. During the month of May, nurseries were set; the fields were progressively flooded and the land was rotary hoed under water. This method of cultivating the relatively large fields of the Central Experiment Station has proved to be the most successful so far.

198. Flooding of the Central Experiment Station occurred during the month of November. This resulted in the inundation of the pump house and damage to the electrical fittings of the pumps. It is planned to overhaul the pump house, completely, during the latter part of 1957.

199. After deducting that part of the seed crop which is unsuitable for planting, the following quantities of seed remain in stock for distribution to farmers during 1957, subject to satisfactory germination tests.—

				lb.
D. 52/37	...	...	...	91,300
Sughandi	...	...	...	32,900
D. 110	...	...	...	43,400
				167,600

SEED PADDY DISTRIBUTION

200. There was a small demand for seed paddy, partly because many farmers had already reserved supplies of pure line paddy from their 1955 crops. The following quantities were distributed with the help of the Extension Division:—

				<i>lb.</i>
D. 52/37	...	...	...	2,085
D. 110	...	...	...	5,136
Sughandi	...	...	...	6,654½
				13,875½

PADDY COMPETITION

201. One Paddy Competition was arranged in the Oropouche Lagoon for the purpose of encouraging farmers to produce and retain pure line seed paddy.

SOIL SURVEY

202. On the advice of the F.A.O. Consulting Engineers, soil surveys were undertaken in the Nariva Swamp and in the Le Monte Section of the Fishing Pond Rice Expansion Scheme.

ENGINEERING INVESTIGATION FOR RICE EXPANSION

203. The investigations by a firm of consulting engineers commissioned by the F.A.O. which started at the end of 1954, was completed in the month of September, 1956. An interesting preliminary report of these investigations was received, and Government now awaits the final report of the engineers.

204. The revenue of the Rice Division is included in Table XXIV.

SEED PRODUCTION

205. In accordance with the present seed distribution policy, pure lines of Sughandi, D.52/37 and D.110 have been grown by the Economic Botanist and 3,000 lb. of each variety have been reserved for the use of the Agronomist (Rice) for his cultivation of seed paddy at the Central Experiment Station for distribution to farmers.

206. Eighty-two pure lines were grown in single, hundred and thousand head stages with the view of purification before testing. In addition, the progeny of 51 hybrids from the United States of America and 20 from British Guiana were grown as population rice. Their performance was not promising and it was necessary to make selections.

207. A small plot of "Dima", a new variety from Surinam, was grown which gave yields of 4,500 lb. per acre. No lodging occurred and the quality is excellent. Indeed, this variety shows great promise.

VARIETY TRIALS

208. Four variety trials were laid down at the Central Experiment Station. Plots, in some experiments, were severely damaged by crabs. The general conclusion drawn, however, was that there is considerable promise among certain local

varieties; notably T.L.S. 52/354 and 52/293, which also did very well last year. The performance of the Demerara rices was disappointing, especially D.52/37 which gave best results in 1955. This variety has again shown itself as one that is difficult to establish. The variety Sughandi was, again, disappointing. On the other hand, the variety Red American gave a better performance this year.

OTHER TRIALS

209. A trial to test the effect of four herbicides was conducted in a $4 \times 3 \times 3$ Factorial design. Crab damage to plots was severe and yields were, as a result, severely affected.

Dicotox gave best control of weeds;
Planatox adversely affected plants;
Agroxone gave fair control;
Spontox was not very effective.

PESTS AND DISEASES

210. Observations were made on the annual attack by the moth borers, *Rupela albinella* Cr. and *Diatraea saccharalis* Fab., on pure line plantings at the Central Experiment Station. For the first time, a correlation between "white heads" and borer incidence was shown in a survey carried out on the varieties. The future work contemplated is a quantitative assessment of damage to the crop and a comparison between pure line and local varieties.

Other Crops

MAIZE

211. Encouraging results were obtained with preliminary trials with the vernalization of maize seeds by immersing in water at 40°, 50° and 60° Centigrade.

SORGHUM

212. Plots of broom corn are being tested at the St. Augustine Station.

VEGETABLES

213. *Tomatoes*—Seeds of *Lycopersicum pimpinellifolium* are being grown at the St. Augustine Nursery with the view of crossing with *L. esculentum* and producing a hardier tomato which will do better in the wet season.

SISAL

214. The performance of plants has been somewhat disappointing. *Agave sisalana* gave better results than *A. fourcroydes*.

COVER CROPS

215. Fifty-four species of legumes introduced in 1954 and 1955 were grown. Of these, the only ones of promise are *Stylosanthes gracilis* and *Mimosa invisa*.

216. A total of 260 lb. of *Tephrosia candida* seed has been collected. So far there has been no demand for seeds.

OIL CROPS

217. *Oil Palms*—Oil palms at the Central Experiment Station are now bearing.

218. *Palmarosa (Cymbopogon martini)*—Seeds of Palmarosa grass were obtained from India and grown at the Central Experiment Station. A small amount of seed has been harvested but no essential oil has yet been extracted.

Pests and Diseases

219. *Sclerotium Wilt Disease on Russian Comfrey (causative organism Sclerotium rolfsii)*—Russian Comfrey grown at the Central Experiment Station was badly attacked by Sclerotium Wilt disease which finally caused the death of plants.

220. *Bacterial Wilt Disease of Tomatoes (causative organism Pseudomonas solanacearum)*—Many reports were received during the year of tomato crops being affected by Bacterial Wilt Disease. No satisfactory control measures are available but crop rotation and proper drainage are recommended.

221. *Pineapple Wilt Disease (caused by the Mealy Bug, Pseudococcus brevipes (Cockerell))*—This disease was diagnosed on an estate near Arima. Control measures appear to be the eradication of the associated stinging ant, *Solenopsis germinata*, F., by spraying with Aldrin and treatment of planting material, before establishment, by immersion in a suspension of Parathion to eliminate the Mealy Bug.

222. *Moth Borer of Sweet Potato (causative organism Megastes grandalis Gn)*—Promising control of the moth borer was achieved by using Aldrin or Dieldrin. More frequent application at a higher concentration was emphasised for next year's experiment.

VEGETABLE CROPS—PESTS

223. Dry season vegetable cultivations at Penal were jeopardised by a serious outbreak of white grubs (*Fam. Melolonthidae*) which were controlled by the use of Aldrin dust.

224. Watermelons, cucumbers, tomatoes, beans and peas suffered from severe attacks by white grubs and cutworms (*Fam. Noctuidae*) at the Central Experiment Station in the rice area. White grubs were controlled by dusting with B.H.C. and cutworms kept in check by spraying melons and cucumbers with lead arsenate and beans and peas with D.D.T.

225. The leaves of patchoi, pumpkins, cucumbers and tomatoes were severely attacked by the Chrysomelid, leaf eating beetle, *Ischiopachys cuprea*, F., at a Waller Field food garden where spraying with D.D.T. was recommended.

226. Water Cress was found to be attacked by water snails on land adjacent to the Churchill Roosevelt Highway. Although not difficult to control by chemical means, the main problem was to be certain that no phytotoxicity occurred after application of the molluscicide.

Grasses and Forage

CENTRAL EXPERIMENT STATION

227. At the Central Experiment Station 24.3 acres were established in Pangola grass and 36.3 acres in Elephant grass. More even rainfall and better types of grass provided excellent grazing for all stock throughout the year. Approximately 100 head of adult stock were carried throughout the year. The intensity of stocking in regard to building accommodation and improved grassland acreage continues to be high.

228. The 12½ acres of Kudza, which were planted in October, 1952, continued to provide excellent grazing but the field is now showing slight signs of deterioration. Replanting after a corn crop every five or six years might be necessary.

229. No further planting of Lucuntu Grass (*Ischaemum timorense*) have been made. This is because of its low productivity in the dry season, when grazing is most required and its ability to spread, unassisted, into Pangola fields by natural means. When this occurs, it spreads rapidly and completely kills the Pangola grass by smothering it. These two grasses cannot, therefore, be grown as a mixture.

230. Pangola Grass (*Digitaria decumbens*)—This grass flowers in the early wet season after a good growth from January to May. It has been steadily extended because it continues to show itself to be an outstanding grazing grass on low clay soils as well as on poor sandy uplands. Trial plots in several centres in Trinidad and Tobago are arousing interest among estate owners, and several outside requests for planting material have been met.

231. Experimental grass plots, including Pangola, Lucuntu and Toco Grasses have been established during the year at centres in Trinidad and Tobago.

232. Livestock on the Central Experiment Station is dealt with in paras. 328-331 of this Report.

Soil Survey

233. Work continued on the Soil Survey of Southern Trinidad and 40,500 acres were completed. Of these, 24,300 acres were in the Erin Ward and 16,200 acres in the Ward of Cedros.

234. Two special Surveys were undertaken:—

- (a) a survey of the Nariva Swamp;
- (b) a survey of the Le Monte Section of the Fishing Pond Rice Expansion Scheme.

These Surveys were made to determine the suitability of the areas for rice development.

235. A total of 11,357 analyses were completed during the year in the Soils Laboratory, these included:—

- (a) 6,296 on the Nariva Swamp Survey;
- (b) 936 Sugarcane analyses;
- (c) 843 on samples from run-off experiments;
- (d) 396 foliar analyses.

Soil Conservation

EROSION INVESTIGATIONS

236. (a) *L'Esperance Run-off Plots*—These trials were maintained along with the routine collection of rainfall and run-off data. Two hundred and sixty-four samples of run-off were handled.

(b) *El Carmen Sugarcane Run-off Trials*—Two trials, established to assess the rate of erosion in high cambered sugarcane beds, were continued. Eighty-four samples of run-off were submitted for analysis.

(c) *Rio Claro Sugarcane Run-off Trials*—Trials, which were established on sloping land to assess erosion associated with different cultural practices, were continued. Run-off and rainfall data were collected and 264 run-off samples were submitted for analysis.

(d) *Mt. St. George Run-off Plots*—These trials were designed to obtain information with regard to erosion and run-off associated with three types of land use (vegetable cover). They are in their first year of operation.

(e) *Five Rivers Small Watershed Trials*—Comparative data on erosion and run-off, under shifting cultivation and a strip-cropping system of conservation farming, continued to be collected.

(f) *Brickfield Forest Watershed*—These run-off trials, consisting of three small watersheds, were established and are being run in co-operation with the Forest Department. They aim at obtaining information on overall erosion associated with all the stages of teak stands, from the clearing of natural forest up to the time when the teak is 15 years old or older. More specific information is also being sought on the magnitude of sheet erosion as distinct from erosion from all causes, including gullyng, gully caving, landslip, &c. For this purpose, duplicate small plots (1/70 acre) have been put into operation in a 10-year teak stand and similar plots are due to be established in natural forest.

DEMONSTRATIONS

237. Maintenance of the Land Use Demonstration at Maracas Land Settlement was taken over by the Land Settlement Division over a year ago and very satisfactory progress can be reported.

Agricultural Engineering

FIELD ENGINEERING

238. *Irrigation—St. Joseph*—At the St. Joseph Stock Farm, a sixty acre block of Elephant grass to the south of the river is now irrigated by means of a sprinkler system which was put into operation in April. Because of the unusually wet dry season, it was not necessary to operate the system on full scale.

239. The pump belonging to the system is a centrifugal type, powered by a 30 h.p. electric motor. It delivers 400 gallons per minute at 75 lb. pressure. The installation is permanent. Water conveying equipment is portable and consisting, mainly, of aluminium tubing and fittings. It was supplied by Wright Rain of England.

240. Water is abstracted from the St. Joseph River, which has a good and clean supply. The maximum output rate of the system is 1.1 acre/inches per hour. Despite the good cover provided by Elephant grass, the soil was unable to absorb all the water when applied at a rate greater than 0.5 inches per hour. The optimum application rate is yet to be determined.

241. *Tobago*—On the Tobago Stock Farm, a semi-portable sprinkler system was also installed. It is capable of irrigating about fifty-five acres of Pangola and Elephant grass, including seven acres which were, previously, flood irrigated.

242. The output of this system is the same as that of the St. Joseph Farm. It is, also powered by electricity. The water supply is obtained from a natural spring which has a flow of about 200 gallons per minute during the dry season. It is planned to store this flow over a twenty-hour period to have a good supply to operate the system for at least eight hours. So far, the storage capacity of the pond is about 119,000 gallons, which allows the system to operate for not more than four hours daily.

243. *St. Augustine*—The old diesel driven pumping system at the St. Augustine Station could, no longer, meet the increasing water requirements of the nursery. It was replaced by an electric centrifugal pump, delivering 300 gallons per minute at 80 lb. pressure.

244. The layout of the field mains has been re-designed to accommodate a semi-portable overhead irrigation system with rotating sprinklers. The main line consists of permanent 4" steel piping. Most of this was laid down when the station was first started and the pipes have remained in excellent condition. The sub-mains are portable and made of 3" aluminium. They are connected with the main lines through aluminium hydrants. The lateral lines consist of 2" aluminium tubings.

245. It was possible to lay only a part of the sprinkler equipment this year. The portion of the equipment, so far available, can utilize only half of the pumping unit. It is hoped to have the whole system completed when more funds are made available.

POWER SUPPLY

246. The electrically driven pumps are run under the off-peak rates of the Trinidad and Tobago Electricity Commission, which arrangement considerably reduces the cost of power supply to the units. Under this system, the Commission may interrupt the power supply during daylight between the hours of 10.00 a.m. and 12.00 noon. In operating the irrigation systems, it is arranged to have the changes of lateral lines made during the time that there is this peak demand on the power station.

IRRIGATION TRIALS

247. It was not possible to obtain reliable information from the trials laid down to determine the response of Elephant grass to various irrigation and fertilizer treatments. This was caused by the late start in operation of the St. Joseph irrigation system and by heavy rainfall during the dry season.

SPRINKLER UNIFORMITY PATTERNS

248. Some tests were carried out on the precipitation patterns of Wright Rain Senior and Wright Rain Low Angle Junior Rotating Sprinklers. These tests show considerable variation depending on the different wind conditions under which they were tested. The work will be continued next year.

FERTILIZER DISTRIBUTOR

249. Several tests were carried out on the fertilizer distributors attached to the irrigation systems at the Government Stock Farms. They were constructed at the Central Experiment Station's Machine Shop from low costing materials. Their operation is extremely simple and good results are obtained by proper manipulation. Among the advantages, is the amount of labour saved in the application of fertilizer to crops under irrigation. Moreover, the operators of the irrigation system require no additional help to apply fertilizers.

WATER REQUIREMENTS

250. Studies were started on the forecasting of irrigation requirements of crops in the Colony. The work is directed at finding the method which is most practical and sufficiently accurate for the purpose of the average farmer, who intends to irrigate during the dry season.

DRAINAGE

251. A start has been made with regard to the studies of the natural internal drainage on some soils with impeded drainage in Trinidad. The first phase is planned with the view of collecting data on the extent of impeded drainage in the different soil types. This information will be used as a guide in finding the most suitable methods of bringing the soils into the physical state necessary for optimum plant growth during the rainy season. The work, at the onset, is limited to the soils of the Central Experiment Station.

GRASS DRYING

252. Some experiments on grass drying were started, but had to be abandoned, temporarily, because of necessary alterations to the drier. Results obtained with Elephant grass are, so far, encouraging. The work will be extended to legumes and other grasses.

MACHINERY

253. *Departmental Equipment*—Cultivation and maintenance equipment of the Central Experiment Station were kept in reasonably good order. Cultivation work was, however, not all completed on time because of the unusually wet conditions during the cultivation season.

254. The Machine Shop was able to handle all repairs and construction work.

255. The Servicing Section was re-organised early in the year and has since worked satisfactorily.

256. No outstanding new type of equipment appeared on the local market. The new type of low volume spraying machines (mistblowers)—especially the Knapsack types which were introduced into the Colony during 1955, continued to win favour with the planter and are being increasingly used.

Stored Products

257. Advice was given for the fumigation of bulk corn at a Port-of-Spain brewery by the use of proprietary mixture of ethylene dichloride and carbon tetrachloride.

258. A heavy infestation by *Psocids* of chicken feed was investigated in a Port-of-Spain warehouse. Fogging with pybuthrin and better staking methods disposed of the infestation.

259. At the request of a large company dealing in food, a survey was made of their premises, warehouses and cold storage facilities. This was done in co-operation with the research workers of the Imperial College of Tropical Agriculture.

260. An efficient method appears to have been evolved for storage of paddy at the Central Experiment Station. The walls are sprayed with a mixture of B.H.C. and D.D.T. and the paddy was treated, immediately before it was bagged, with Lindane dust. In addition, the outside of the bags were dusted as the stacks were made.

261. The draft of detailed report on "Storage Problems in Trinidad" by D. W. Hall, Colonial Liaison Officer of the Pest Infestation Laboratory, England was received. This report covers the visit made by Mr. Hall in April to June, 1954 in connection with storage facilities in Trinidad. The report deals with all major crops and imported food products. Among his many recommendations, two are quoted here.

- (a) The establishment of a Port Fumigation Service.
- (b) The creation of a Government Organisation to inspect food storage premises to ensure that certain standards, as laid down by legislation, are maintained.

Apiculture

262. There are 242 registered apiaries in the Colony of which six are in Tobago.

263. The weather was unfavourable to beekeepers. Heavy rainfall during the time when trees were in bloom resulted in a lack of nectar. In consequence of this, production was poor.

264. Prices of honey varied from \$7.50-\$12.00 per four-gallon tin; prices of wax varied from 84 cents-\$1.00 per lb. Honey was retailed at the steady price of 36 cents for 14 oz. in a clear glass bottle and 55 cents for 1 lb. in a jar.

265. The Co-operative Beekeepers' Society had another successful year. Nearly 10 tons of honey were handled of which seven tons were exported to a firm in Germany. The balance was packed in jars and bottles for local trade. It has been decided not to export any more honey until the demands of the local market have been satisfied. In March, the Society was put into possession of leasehold premises at St. Joseph. The construction of a packing plant was at once started and completed in April.

266. The Inspector of Apiaries continues to function as Secretary-Manager of the Society.

267. As far as it is known, there were no infectious diseases in the Colony. The wax moth continued, however, to do damage and caused the loss of many hives. Hunting ants destroyed two apiaries.

268. Departmental apiaries were maintained at the following stations—St. Augustine, Central Experiment Station, La Pastora, El Reposo, Rio Claro, Penal in Trinidad and Mt. St. George in Tobago.

269. No queens were reared for sale during the year because of unfavourable weather.

270. A new honey house was built at La Pastora and a combined honey house and storeroom at St. Augustine.

271. The Inspector of Apiaries visited most of the beekeepers in the Colony during the year. He conducted two courses of twelve lectures each at the Eastern Caribbean Farm Institute.

272. Colonies of bees have been given to two schools where demonstrations are given at regular intervals.

273. Demonstrations and displays were given at the Tobago District Agricultural Society's Exhibitions, the Poultry and Goat Show and four Cane Farmers' Livestock Shows.

Animal Health

INCIDENCE OF ANIMAL DISEASES IN THE CARIBBEAN

274. The Animal Diseases Reporting Service of the Caribbean Commission continued to operate during the year. The summary of notifiable diseases, as occurring in the Colony is shown in Table XXV.

LEGISLATION

275. Certain regulations, made under the Animals (Diseases and Importation) Ordinance 1954, came into operation. These are to be found in the summary of Agricultural Legislation.

NOTIFIABLE DISEASES

276. *Paralytic Rabies (Bat-transmitted)*—It is very gratifying to record that the incidence of this disease was of an exceptionally low order. Only three laboratory confirmed cases in cattle were recorded. The corresponding figures during 1955 and 1954 were 22 and 270 cases respectively.

277. It is also worthy to record that an all time high record number of vaccinations were carried out as follows:—

<i>Cattle</i>	<i>Water Buffalo</i>	<i>Horsekind</i>	<i>Goats</i>	<i>Sheep</i>	<i>Total</i>
20,439	807	2,421	1,069	15	24,751

During 1956, a total number of 9,780 animals were vaccinated.

278. Very marked activities have resulted in the implementation of the control proposals mentioned in last year's report, which may be summarised as follows:—

- (a) the appointment of the Paralytic Rabies Control Committee;
- (b) the training of a Veterinary Officer in rabies diagnosis, made possible under a three-month World Health Organisation Fellowship;
- (c) the take over by the Department of Agriculture of control with regard to activities of the Bat Inspectors together with the responsibility for the laboratory diagnosis of the disease in animals;
- (d) the appointment of a part-time Zoologist within the Department;
- (e) implementation of the mass cattle vaccination campaign.

279. In view of the exceptionally low number of cases, when considered along with the introduction and use of Flury vaccine late in 1955; the application of the mass vaccination technique and the very large number of animals vaccinated, it seems reasonable to predict that the incidence of this disease can be reduced to a very low figure in the near future.

280. The Veterinary Officer (Rabies) in his report, records:—

- (a) the establishment of a mouse colony at the Veterinary Laboratory, which is primarily for use in the diagnosis of this disease;
- (b) the construction of five isolated and escape-proof cages for use by dogs suspected of harbouring this disease;
- (c) the laboratory examination of brain material from five cows, one donkey, eighteen bats and one dog; from which three cow brains were positive;
- (d) the examination of a large number of bat smears (840) for the presence of Negri bodies, by which it is now known that seven bat species, in addition to the vampire bat, have been found to be Negri body positive;
- (e) the examination of two cattle brain specimens from British Guiana and one from Grenada—all of which proved to be positive.

281. Both the Veterinary Officer (Rabies) and the Zoologist were exposed to rabies infection. It was considered advisable that these officers should receive anti-rabies treatment.

282. Because of this occurrence, active consideration is now being given to the specialised prophylactic immunisation of all personnel who are engaged in this field of work.

283. By the co-operation and assistance of Dr. W. G. Downs, Director of the Trinidad Regional Virus Laboratory, the Zoologist was provided with laboratory and office facilities for himself and his assistant at this centre. It is gratifying to record that there is close co-operation between the Virus Laboratory and this department in their effort to increase the knowledge of bat-transmitted diseases and the ecology of bats found in Trinidad.

284. Extracts from the report of the Zoologist are given below :—

- (a) A total of 2,755 bat specimens were received for laboratory examination, which included 823 vampire bats.
- (b) Of this total number, 1,535 specimens were examined for rabies. Five of these were found to be Negri body positive; (two vampire and three other species). The remainder were either unsuitable for examination or are awaiting examination.
- (c) A new technique was tried for the collection and destruction of vampire bats. Collection was temporarily suspended in April in order to allow known roosts to have a resting period. It was considered that such a resting period would allow more bats to accumulate. This technique proved successful in that one Inspector, in the South, made a record single-handed catch of 126 vampire bats over a five-day period, during the month of May. This number yielded 32 males and 94 females. Of the females, approximately 50 per cent. were either lactating or pregnant. In July, another roost in Waller Field yielded 124 vampire bats.
- (d) It was found advisable to remove bat brains in the field so as to reduce the number of specimens sent in from the South which arrived at the laboratory, for examination, in an unsatisfactory condition.
- (e) One hundred and twenty-two mongooses were collected and these proved to be rabies negative on examination.

285. The Zoologist also carried out an Anti-Rabies Survey in Tobago, which consisted, mainly, of a sampling collection of the bat population. Two species, so far unrecorded, in Tobago, were collected. This brings the number of known species to fourteen. No vampire bats were collected.

286. In addition, this officer carried out certain other work which included :—

- (i) studies on certain bat repelling agents;
- (ii) the preparation of a field key for the identification of bats by families, which was distributed to the Bat Inspectors and used by them for identification purposes;
- (iii) a preliminary study of the various types of fruits and seeds known to be eaten by the fruit bats of the genera *Artibeus* and *Carollia*; which information will be published in the Journal of the Agricultural Society of Trinidad and Tobago.

287. Full use was made of an educational programme throughout the areas where the mass vaccination campaign was conducted. This included frequent displays of the Departmental Film on Paralytic Rabies entitled "It's No Mysterious Disease". In addition, lectures were given by several Veterinary Officers.

288. The control programme will be continued during 1957 in an effort to build up and maintain a maximum immunised cattle population, capable of resisting the ravages of infected bat vectors.

SWINE FEVER

289. For the fourth consecutive year, the Colony remained free of this disease.

290. A total of 1,892 pigs were vaccinated as compared to 1,876 in 1955.

291. All pigs sold by the Department were vaccinated prior to delivery.

NEWCASTLE DISEASE

292. Compared with 1955, there was a marked decrease in the number of outbreaks. Prophylactic vaccination is now firmly accepted and practised by the majority of large poultrymen.

SWINE ERYSIPELAS

293. The diagnosis of this disease was confirmed by bacteriological methods in one outbreak. Protective vaccination was carried out in the infected herd.

TUBERCULOSIS

294. Table XXVI shows the number, classes and percentages of reactors to the Tuberculin test carried out during 1954-1956. The incidence of this disease continues to be low.

NON-NOTIFIABLE DISEASES

295. These did not differ in any significant manner to those reported in 1954.

VETERINARY ATTENDANCE—POLICE HORSES AND DOGS

296. These duties were performed by the Veterinary Officer, North, in Trinidad and by the Veterinary Officer in Tobago. Routine and special visits were made and professional services rendered.

VETERINARY PRACTICE SERVICE

297. This service, whereby certain Veterinary Officers undertake private practice as a service to rural livestock owners, continued in operation.

298. Four officers are involved in the Northern, Southern and Eastern districts in Trinidad and in Tobago. There were 495 calls.

VETERINARY DIAGNOSTIC LABORATORY

299. This service was maintained during the year. The following specimens were handled:—

- (i) Milk—Samples for
 - (a) bacteriological examination;
 - (b) phosphatase test.
- (ii) Faecal examinations
- (iii) Serological tests
- (iv) Blood films
- (v) Autopsies, including poultry
- (vi) Rabies diagnosis.

INVESTIGATIONAL WORK

300. Investigational work was again restricted because of staff shortages. A certain amount was, however, performed by the acting officer.

301. The Brucellosis Survey started in 1954 was continued. Sera from cattle, pigs, sheep and donkeys were subjected to the agglutination test. A total of 708 tests were made. Six reactors (cattle) were found.

302. These results tend to confirm the conclusion already formed—that the incidence of this disease is at a low level in the Colony.

303. A start was also made on a preliminary survey into the possible incidence of Equine Trypanosomiasis in the Colony. Results, so far, have been negative.

FEEDING TRIALS AT THE ST. JOSEPH STOCK FARM

304. *Pig Feeding Trials*—The purpose of these trials was to compare the effect of feeding bananas plus fish meal *ad lib* with a standard ration feed. It was found that:—

- (a) Only in the last four weeks of the sixteen week experiment were the results significant—fish meal and bananas being significantly better than the standard ration in producing weight gains;
- (b) the average cost per lb. gain for all groups was 25.45 cents;
- (c) the average daily consumption of fish meal was 0.77 lb. and bananas 17.6 lb.;
- (d) the average daily consumption of the standard ration was 3.90 lb.;
- (e) bananas and fish meal can be economically fed to pigs and produce a satisfactory carcass with a dressing of 73.5 per cent.

305. *Feeding Trials with 12 Cows*—Locally produced feeding stuffs were used in this trial as follows:—

- (a) replacing crushed corn with cocoa pod meal in a standard ration;
- (b) replacing 25 per cent. crushed corn with citrus pulp meal.

306. Nothing significant was obtained from this experiment, except that dairy cows will tolerate cocoa pod meal up to 30 per cent. in their ration without ill effect.

Animal Husbandry

LIVESTOCK SHOWS

307. The following livestock shows were held during the year:—

- (i) four Cane Farmers' and Peasants' Shows;
- (ii) the Tobago District Agricultural Society Show;
- (iii) the joint show sponsored by the Trinidad Poultry Association, the Trinidad Goat Society and the Beekeepers' Association.

308. At these Shows, representative animals from the Stock Farms were exhibited and improved methods of animal husbandry and livestock disease control were demonstrated. Prizes were given in the form of bull calves at reduced prices and trios of Barred White Rock poultry.

BREED IMPROVEMENT

309. Table XXVII gives details of services by selected sires at the Stock Farms and District Breeding Units in Trinidad and Tobago to privately owned female livestock. The services by livestock of the Department of Agriculture on the Stock Farms and Breeding Units and Stations are not included in this table.

310. Routine sales, at the Stock Farms, of young bulls, bull calves, pigs, poultry, eggs for hatching and eating, culls and other surplus livestock, continued as in 1955. In addition, there were three sales during the year—one general auction sale and two sales of grade dairy heifers at reduced prices, which were sold to selected peasant farmers under special agreement.

311. Thirty-one animals, comprising cattle 21, water buffalo 1, goats 6, and horsekind 3, were offered for sale and realised \$3,801.

312. A total of 46 heifers were sold under the special agreement as compared with 34 in 1955.

313. Comparative sales of livestock for 1955-1956 at the Stock Farms are shown in Table XXVIII.

314. The following number and classes of livestock were imported by the Department for breeding purposes:—

Cattle Ten 'Jamaica Reds' from Jamaica—two bulls and eight heifers.

Horsekind Four donkeys from Jamaica—two jacks and two janets.

315. Voluntary castration of scrub sires was encouraged and the following were effected:—

<i>Bulls</i>	<i>Boars</i>	<i>Rams</i>	<i>Bucks</i>
25	175	14	10

ARTIFICIAL INSEMINATION

316. The demand for this service is steadily growing and the scope has been extended, gradually, to cover almost the Northern, Eastern and Central areas of Trinidad. In order to meet the growing demands, a second mobile unit has been provided for in 1957 and three additional inseminators will be appointed.

317. As the radius covered by this service extends, the service bulls at corresponding breeding units are being removed. Four such bulls have been removed so far.

318. Plans are being made to initiate the service, on a limited scale at the Tobago Stock Farm.

319. During the year, the total number of inseminations carried out were 1,931 as compared with 1,323 in 1955.

STOCK FARMS

320. There are three established stock farms, located at St. Joseph, Tobago and the Central Experiment Station. These were maintained during the year. The comparative livestock strength for the years 1955-1956 is given in Table XXIX.

321. At the St. Joseph Stock Farm, it has not been possible to carry out any major part of the proposals which were made by Dr. T. P. Lecky which, in any event, can only be implemented over a long period. Nevertheless, the grouping of selected families into five herds has been made, and the nominated mating within these herds will be carried out as far as possible and as limited by the lack of progeny tested sires.

322. The Veterinary Officer who will be in control of breeding work is at present undergoing a training course at the Institute of Animal Genetics, Edinburgh. It is expected that he will return during the second half of 1957.

323. There has been no change in the maintenance of the Zebu herd or in the breeding of grade dairy heifers (Holstein-Zebu) for distribution to dairy farmers.

324. The breeding policy at the Tobago Stock Farm also remains unchanged, viz. :—

- (a) the maintenance of a Sahiwal herd;
- (b) the maintenance of a Grade Holstein herd;
- (c) the maintenance of a 'Jamaica Red' herd.

325. Ten 'Jamaica Reds', comprising eight heifers (four in calf) and two bulls, arrived from Jamaica by air in February, 1956. Five of the heifers have calved and the other three should calve in 1957.

326. These animals adapted themselves very rapidly to Tobago conditions. It is confidently expected that the breed will make a major contribution to the gradual development of a suitable beef type animal for this Island, where the prospects for such trade are favourable.

327. Holstein bulls are being gradually stationed at several breeding units to replace Sahiwal bulls in keeping with the change over to the Holstein grade as the recognised dairy breed.

328. The breeding policy at the Central Experiment Station Farm remained unchanged, namely, the breeding of grade Holsteins for distribution to dairy farmers.

329. Many improvements were carried out. These included an extension to the cow shed, which raises its capacity from 34 to 52, together with the construction of 12 loose boxes, calf pens for 20 animals and two concrete holding yards.

330. In the dairy, the change over to aluminum capped milk bottles, the installation of electricity and the laying of a water supply from the mains were some of the major improvements effected.

331. The water buffalo herd of 21 animals was removed during the year to O'Meara pasture, which now becomes the Departmental centre at which this herd can be built up in isolation.

MILK PRODUCTION

332. Continued emphasis is being laid on the use of good quality grass as the best and cheapest food for milk production. Accordingly, dairy herds of the Department of Agriculture are kept at pasture both by day and night.

333. At the St. Joseph Stock Farm, it is gratifying to record that during 1956 the feeding of concentrates has been reduced to a record low level; for the animals received their maintenance and produced their first gallon of milk on grass alone. Milk yields were satisfactorily maintained under this system which resulted in a reduced feeding of 6 lb. of concentrates daily per cow.

334. The main objective of the Farm is to reduce the high cost of local milk production. Towards this end two major contributions have been made:—

(i) reduced feeding of concentrates;

(ii) reduced labour costs by allowing the animals to cut their own grass.

335. The main production of milk continues to be at the St. Joseph Stock Farm, although increasing supplies are being produced at the Central Experiment Station and the Tobago Stock Farm.

336. Total milk production was as follows:—

St. Joseph Stock Farm	...	...	...	52,227	gallons
Tobago Stock Farm	...	...	...	5,744	„
Central Experiment Station	...	...	...	25,515	„
				83,486	„

This figure represents an increase of 4,496 gallons over 1955.

337. The sale of pasteurized milk amounted to 92,406 gallons (2,121 gallons less than in 1955). It consisted of surplus milk from the Farms, not required for calf feeding. This was supplemented by outside purchases. All milk was then pasteurized and distributed to hospitals, schools and other institutions.

338. The comparative milk production at the St. Joseph Stock Farm over the years 1952-1956 is shown in Table XXX.

339. It is gratifying to note that there has been an improvement, as compared to 1955, especially in view of the change in management as already outlined.

340. Mention should be made of the fact that rigid culling of unsatisfactory producers cannot yet be carried out in view of the need to retain a full complement of breeding females.

341. The performance of twelve first calf heifers is encouraging, their overall maximum daily average being 25 lb.

342. An all time record was made by a cow at the St. Joseph Stock Farm, "Jasomattee 18", in her fifth lactation. This cow reached a maximum daily yield of seven gallons of milk. The animal also holds the record for the highest daily yield as a first calver—six gallons a day.

343. "Jasomattee 18" is sired by a Holstein bull imported from the Carnation Farm, United States of America out of a half bred grade Holstein cow. Her lactation figures are as follows:—

First	...	...	...	...	12,176 lb.
Second	...	...	...	...	11,766 ,,
Third	...	...	...	...	13,447 ,,
Fourth	...	...	...	...	12,065 ,,
Fifth (1st September, 1956, to 31st December, 1956	...	...	...	...	6,525 ,, (uncompleted)

HORSEKIND

344. Thoroughbred stallions are no longer stationed at stud. This has been the only change in breeding policy with regard to horsekind.

345. Major emphasis is still being laid on making an adequate number of jacks available for both mule and donkey breeding in Trinidad and Tobago.

346. Two jacks and two janets were imported from Jamaica and stationed at the Tobago Farm. The animals possess a great deal more bone and substance than the American type. Indeed, it is confidently expected that the jacks will make a major contribution in improving the quality of both mules and donkeys in Tobago.

347. Inasmuch as the emphasis on horsekind breeding is being centred at the Tobago Farm, the Janet strength at the St. Joseph Farm was transferred there during the year.

348. The total strength at 31st December, 1956 is shown in Table XXXI.

PIGS

349. There was no change in the two breeds maintained, namely Large Black and Berkshire. The former is, by far, the more popular.

350. At the St. Joseph Stock Farm there was a decrease in the number of births as compared with 1955. Though the average litter size was greater, there was an increase in piglet mortality.

351. At the Tobago Stock Farm, as a result of culling breeding sows, the number of piglets born was less than during 1955.

352. The total number of pigs born was 476; 360 Large Blacks, 116 Berkshires. Of this total, 30 were still-born.

353. The sex distribution of live births was 231 boars and 215 gilts.

354. The total pig strength at 31st December, 1956 is shown in Table XXXII.

GOATS

355. Two breeds, British Alpine and Anglo-Nubian were maintained both in Trinidad and Tobago.

356. In Trinidad, the animals were housed and their production of milk was recorded. In Tobago, they were kept in an open range system with emphasis on the production of mutton rather than milk.

357. During the year 86 kinds were born—28 pure bred British Alpine; 4 pure bred Anglo-Nubian; 54 Grade Anglo-Nubian.

358. The total goat strength at 31st December, 1956 is shown in Table XXXIII.

SHEEP

359. This class of livestock is centred at the Tobago Stock Farm where there was no main change in the management of the flock.

360. There was, however, a change in the breeding programme whereby three breeds were maintained separately at breeding time, and each headed by a respective ram. These three breeds were, Black Head Persian, Barbados Black Belly and West African. The rams were placed with the flocks in August so as to allow a lambing season during the dry period in 1957.

361. Internal parasites continue to give a fair amount of trouble and routine alternate dosing with Phenothiazine and Copper Sulphate is carried out.

362. There was a small increase in the number of sheep sold as compared with 1956.

363. The total strength at the end of the year was 100 head, composed of 14 rams and 86 ewes.

POULTRY

364. Considerable development and expansion took place in the units, both in Trinidad and Tobago. This consisted mainly in the application of improved methods of management, with regard to selection, feeding and housing.

365. At the St. Joseph Stock Farm, where the main activities are centred, a definite breeding programme, including progeny testing of males, was instituted in the Rhode Island Red breed. It is hoped, as facilities increase, to extend the scope of this programme to all breeds on both farms.

366. An egg cooling cabinet with storage space for 2,500 eggs was installed at the St. Joseph Stock Farm. The use of this machine has, without doubt, resulted in more vigorous hatches.

367. An electric incubator with a capacity for 600 eggs replaced the former inadequate soil-burning machine at the Tobago Stock Farm.

368. Five deep-litter houses were constructed, three at the St. Joseph Stock Farm and two in Tobago.

369. There was a significant increase in the number of eggs produced:—

St. Joseph Stock Farm	...	...	...	...	83,025
Tobago Stock Farm	...	...	...	...	25,262
Total Produced					108,287

A total of 39,527 eggs were produced in 1955.

370. The factors responsible for this considerable increase in egg production are the rise in the yearly production of both the Rhode Island Red and White Leghorn and the addition of the White Rock hens to the poultry strength.

371. The 1956, production per bird of the Rhode Island Red breed was 212 at the St. Joseph Stock Farm and 184 at the Tobago Stock Farm. Corresponding figures for white Leghorn were 181 and 203.

372. The White Rock hen unit started to lay in March, 1956 and their 10-month production amounted to 183 eggs per bird.

373. The results obtained from incubation of eggs was generally satisfactory. There was an increase in the overall hatchability which was 66.4 per cent. as compared with 61 per cent. in 1955. This figure would have been higher had there not been failures in the electric power at the St. Joseph Stock Farm on several occasions.

374. An encouraging development was the marked increase in the numbers of chicks sold to the public at both Farms. These amounted to a total of 11,335—8,993 from the St. Joseph Stock Farm and 2,342 from the Tobago Stock Farm.

375. The exchange of pure bred for scrub cockerels was continued during the year. A total number of 496 were issued to the Extension Services for distribution.

376. The Muscovy duck units were maintained at both Farms.

377. The poultry strength as at 31st December, 1956 is given in Table XXXIV.

FENCES, PASTURAGE, IRRIGATION, BUILDINGS, ETC.

378. The routine maintenance of fences continued throughout the year. There is, however, need for major works to be carried out at the St. Joseph Stock Farm.

379. Three deep-litter poultry houses were constructed at the St. Joseph Stock Farm. At the Tobago Stock Farm, one building was erected to house certain stud animals which are available to the public; a pump house was provided to protect the electric irrigation pump and two deep-litter poultry houses were built.

380. Continued emphasis was placed on the maintenance of existing pastures and, as far as possible, there were increased plantings.

381. It is considered that Pangola Grass (*Digitaria decumbens*) holds great promise under local conditions. Observations in this Colony disclose that it is a fast grower and recovers quickly after grazing.

382. Reference is made in paragraphs 227 to 231 concerning the investigational work which is being carried out on grasses and forage crops.

383. The application of the newly installed irrigation equipment at the Tobago Stock Farm made a major contribution to maintaining an even supply of grass during the dry season.

Land Settlement

DEVELOPMENT OF NEW AREAS

384. The development work which started in 1953 with funds provided under a Colonial Development and Welfare Scheme continued under a five-year programme on the following locations:—

Rio Claro

El Recuerdo (Manzanilla)

Gordon Millar Farm

St. Helena

Bamboo Grove

Louis d'Or (Tobago)

The work on these settlements consisted mainly of road construction, drainage improvement, preparation of recreation grounds and the establishment of housing sites. The demarcation of holdings by surveyors of the Land and Surveys Department continued and 125 holdings were made available for occupation by new tenants. Two hundred and twenty-seven applicants were interviewed by the Land Settlement Selection Committee and from these, 125 persons were selected to occupy the vacant holdings.

385. Fifty tenancy agreements involving 336 acres were executed in 1956.

386. Progress was made in establishing tree crops on the Central Farms at Rio Claro, El Recuerdo and Gordon Millar. A total of 55½ acres were planted in clonal cacao, bringing the total acreage to date under tree crops to approximately 185 acres.

387. The Scheme provides for the establishment of 245 acres under tree crops on three Central Farms.

388. A stable to house three animals and a storeroom were constructed on the the Rio Claro Central Farm.

MAINTENANCE OF LAND SETTLEMENTS

389. At the beginning of the year seventeen Land Settlements, previously maintained by the Land Settlement Division, were brought under the supervision and control of the Extension Division for purposes of co-ordination.

390. Advisory visits were paid to all Land Settlements by officers of the Extension Division and settlers were encouraged to employ better methods of husbandry.

391. Progress reports were submitted and allotments inspected for the granting of 25-year leases. Programmes of work were evolved for settlers and applications for settlement examined.

392. Maintenance of the roads were taken over by the County Council.

393. Tenants of the Brooklyn Land Settlement were given the opportunity of purchasing the Government owned houses which they occupied and many of them have since exercised this privilege.

Fisheries Division

394. By the end of the year, the whole-time staff consisted of a Fishery Officer, a Fish Culturist, a Skipper, three Fishery Assistants, five junior clerical staff, a fisherman, a caretaker and two labourers at the Bamboo Grove Station.

IMPROVEMENTS TO FISHING BEACHES

395. The outstanding need for the whole of Trinidad is a modern fishing centre at Port-of-Spain, as Port-of-Spain Fish Market is the hub of the fishing industry of the whole of Trinidad, and no attempt to up-grade the industry as a whole can succeed until Port-of-Spain has a modern and sanitary fishing centre. This need has been formally acknowledged both by Government and by the Port-of-Spain City Council. Moreover, Dr. Georges Salmon, who is seconded from F.A.O. to the Caribbean Commission, will be available early in 1957, to play a leading part in the planning of the new market and harbour.

396. The funds voted for beach improvements were spent at Carenage, Toco and Blanchisseuse.

INVESTIGATIONS

397. The aluminium alloy boat, obtained in 1955, carried out some trawling and trolling investigations.

STATISTICAL DATA

398. The collection of data at Port-of-Spain Market continued throughout the year, in collaboration with the City Council. These data are filed on cards in the Fishery Office, and a summary is plotted on a wall chart for quick reference. As Port-of-Spain Market handles fish from all over Trinidad, a most valuable indication of general trends is obtained, together with a day to day record of the places of origin, species and prices of fish passing through the market. Several cherished popular beliefs, on which fishery policy might otherwise have been based, have been further shaken, and appear likely to be overthrown as figures for a longer period become available.

399. Figures were also collected at Carenage Fishing Centre throughout the year, and at San Fernando Market from 1st August.

400. Figures in Table XXXV on fish handled at Port-of-Spain were obtained from the Fishery Division records referred to above. Those in Table XXXVI on San Fernando and Sangre Grande Markets were obtained from the respective Market Clerks. Those on import of cured fish, in Table XXXVII were supplied by the Central Statistical Office.

FINANCE OF THE FISHING INDUSTRY

401. The ownership of fishing craft comes generally under two categories. The larger units are mostly owned by proprietors who remain ashore, and who may or may not have practical knowledge of fishing. Some of these capitalists own large fleets. On the other hand, many small boats are owned by fishermen, the majority of whom fish when fishing is good, or engage in agriculture when fishing is poor. Few, if any, owners combine the capital with which to buy modern equipment with the knowledge with which to operate it.

402. There are, however, a number of proprietors with some technical knowledge, who are anxious to pioneer new equipment, but who lack the capital with which to buy it. As a result, there are a number of improvised craft appearing, but most of these are so hampered by lack of capital that few ever get to sea.

403. The Agricultural Credit Bank Ordinance was amended late in the year to cover the Fishery Industry. Loans to fishermen should be available early in 1957.

POND CULTURE OF FISH AND FRESH WATER FISHERIES

404. In the early part of the year, the ponds at Bamboo Grove were harvested yielding about 6,300 lb. of fish. Most of these ponds were stocked with male fish in an attempt to reduce breeding and to increase the individual sizes of fish. Unfortunately the results indicate that monosex culture alone will not produce marketable fish.

405. A new series of experiments were set up later in the year to be harvested in the dry season of 1957. These experiments incorporate the use of lime, fertilizers and predatory fish as well as monosex culture. Preliminary results indicate that marketable fish may be produced through the combined use of fertilizers, monosex culture and predator fish.

406. Tilapia fisheries are being slowly developed in oil field dams in the south of Trinidad. At Point-a-Pierre, it is reported that about 5,000 lb. were produced in 1956. A substantial Tilapia fishery was also developed in the Caroni Swamp during the year as a result of the stocking of this swamp in 1953 and 1954. It is estimated that about 30 fishermen catch Tilapia in the Caroni Swamp during the dry season when supplies of sea fish are scarce.

407. By the end of the year, most of the larger lakes and dams in the Colony were stocked with Tilapia. This fish was also placed in the Nariva Swamp.

Marketing Division

LOCAL MARKET CONDITIONS AND SUPPLIES

408. Local markets were generally well supplied with ground provisions and green vegetables throughout the year, both from local and Caribbean sources. The supply of plantains, which had been showing a progressive decline in recent years, improved because limited importations from Venezuela were allowed. Prices for food crops remained at reasonable levels.

GUARANTEED PRICES

409. Government's guarantee to purchase certain food crops in unlimited quantities was extended for another year. The schedule of these crops with their guaranteed minimum prices, is given in Table XXXVIII.

PURCHASES OF LOCAL PRODUCE

410. The quantities of produce purchased by the Marketing Board in 1956 were substantially less than those of the previous year. Because of unfavourable weather conditions, there was little dry corn offered by local growers and what little there was, found a ready sale as "green" corn. To keep the market supplied, it was necessary to import 440 tons of dry corn.

411. Comparative figures for the years 1954-1956 are given in Table XXXIX.

IMPORTATIONS

412. Total importations of food crops from other British West Indian territories were practically at the same level as those of previous years. Substantial increases in the quantities of sweet potatoes and vegetables were offset by marked decreases in the quantities of fruit and plantains. Such decreases were caused, mainly, by the effects of the hurricane in Grenada. Comparative figures for the years 1954-1956 are given in Table XL.

SHIPMENTS FROM TOBAGO TO TRINIDAD

413. The total quantity of produce shipped from Tobago to Trinidad showed a marked increase, especially with regard to peas and ground provisions. There was, also, a significant increase in the shipments of plantains; but shipments of corn fell substantially. Comparative figures for the years 1954-1956 are given in Table XLI.

GROUND PROVISIONS DEPOT

414. The value of purchases by this retail section of the organization decreased from \$145,345.00 to \$122,810.00 and the sales from \$185,065.00 to \$159,403.00.

SEEDS AND PLANTING MATERIAL

415. Sales of imported vegetable seeds were maintained, approximately, at the same level as that of the previous year. Sales of local planting material decreased and this is caused by the fact that locally dug banana plants are no longer supplied by the Marketing Board but by government nurseries, located at Golden Grove and under the control of the Central Experiment Station.

SALES OF FERTILIZERS, INSECTICIDES AND LIVESTOCK MEDICINES

416. Sales of fertilizers fell below the level reached in 1955. This was caused, not by the fall in demand, but by the presence of alternative sources of supply. The demand for insecticides and veterinary medicines, however, show a sharp and encouraging increase. Comparative figures are given in Table XLII.

RICE OFFAL

417. The demand for this offal from rice mills, for feeding straight to livestock, increased progressively with the result that there was little offered for sale otherwise. Purchases by the Marketing Board fell from 140 tons in 1955 to 44 tons in 1956, which quantity produced 17 tons of extracted bran and two tons of rice "brokens" for use in preparing livestock rations.

LIVESTOCK FEEDS

418. Sales of feeds fell from the record level reached in 1955. This was caused by the abundance of various poultry feed brands available on the market and by the establishment of another local feed manufacturing firm. The market was strongly competitive throughout. Sales of pig and dairy rations, prepared by the Marketing Board, continued at a high level. Comparative data for 1954-1956 are given in Table XLIII.

EXPORT OF BANANAS TO THE UNITED KINGDOM

419. Twenty-two shipments totalling 214,341 bunches of bananas were made to the United Kingdom in the course of the year. This is a record for banana shipments since the resumption of the trade after the last world war. The bananas are mainly Cavendish variety and are shipped at the $\frac{3}{4}$ full grade. The average weight was 33 lb. per bunch.

DEHYDRATED CITRUS PULP MEAL

420. The Marketing Board purchased 2,407 short tons from the Co-operative Citrus Growers' Association. One thousand nine hundred and twenty tons were sold on the local and foreign markets and 222 tons were used in the preparation of animal rations. Local sales continued to be slow.

BUSINESS TURNOVER

421. The business turnover of the Marketing Board continued its upward trend. At \$1,360,816 for the year, it represented an increase of 8 per cent. on the previous year's business. Comparative figures for the years 1954-1956 are given in Table XLIV.

Plant Quarantine

MEDITERRANEAN FRUIT FLY

422. The main subject of interest was the outbreak of the Mediterranean Fruit Fly, *Ceratitis capitata* Wied., in Miami, Florida, United States of America, which was detected there on 13th April, 1956. Because of this attack, there was a grave danger of introducing this pest into the Colony, and the West Indies, generally. The Plant Protection Regulations were, accordingly, amended to control the entry of fruit from the United States of America by Government Notice No. 68 of 1956.

423. The greatest risk of introducing Mediterranean Fruit Fly into the Colony would be by means of fruit, carried by travellers, and by adult flies present in or upon aeroplanes. The hazard from commercial shipment of fruit is small; because very little is imported from the danger zones, and that which is received, has usually been fumigated or kept at low temperature.

424. A request was made to the United States Department of Agriculture, asking that Trinidad be included in their proposed survey of the Caribbean area for Mediterranean Fruit Fly.

425. As the result of this request, Mr. James Mabry Jr., Entomologist of the United States Department of Agriculture, visited Trinidad for three weeks. He brought with him special equipment to trap the fruit fly in the vulnerable parts of the island.

426. No Mediterranean Fruit Flies were trapped throughout the survey. Nevertheless, the Department of Agriculture intends to repeat routine trapping at suitable intervals, especially at the height of the fruiting season.

PLANT PROTECTION WORK

427. The following summary provides details of the Plant Protection work carried out by the authorised ports of entry, Port-of-Spain (by sea) and Piarco (by air).

428. *Phytosanitary Certificates*—A total of 354 phytosanitary certificates were issued for the export of cut flowers, fruit, planting material, &c., under the Plant Protection Regulations (1953).

429. *Permits*—A total of 281 permits were issued for the importation of planting material, fruit, vegetables, &c., under the Plant Protection Regulations (1953).

430. "*Quantity*"— of plants and plant products imported and inspected at Port-of-Spain—Vegetables 533,970; Fruit 41,332; Miscellaneous Plant Material 4,442; Banana Suckers 1,174; Cotton 1,949; Broom Corn 166; Cotton Seed Meal 868; Seizures 1,662.

431. "*Quantity*"* of plants and plant products imported and inspected at Piarco—Vegetables 136; Fruit 53; Miscellaneous Plant Material 89; Seizures 109.

432. Material which was seized and destroyed under the Plant Protection Regulations (1953) included:—

Port-of-Spain—Apples, grapes, limes, mangoes, oranges, papaw, pears, soursop and sugar apples; melongene; corn; coconuts; herbs; sugarcane; raw cotton; raw coffee; soil and miscellaneous plants growing in soil.

Piarco—Apples, grapes, limes, mangoes, oranges, pears, pineapples, sapodillas, shaddocks, soursop; carrots, cassava; ginger; peppers; tomatoes and water melons; banana suckers; cut flowers; herbs; orchids; cactus; ivy and hibiscus plants.

Production Sales and Distribution

433. A summary of the total quantity of planting material, crops and livestock produced by the Department and disposed of to the public for planting, breeding and consumption is provided in Table XLV.

Revenue

434. The revenue collected by the various stations and divisions of the Department of Agriculture amounted to \$449,931.71. Details are given in Table XXIV.

PUBLICATIONS

Cacao Cuttage in the Western Hemisphere, by L. L. de Verteuil.

Miscellaneous Publication No. 3 Inter-American Institute of Agricultural Science Turialba, Costa Rica, by L. L. de Verteuil.

The following appeared in Proceedings of the Sixth Inter-American Cacao Conference held at Bahia, Brazil:—

Hybridization work of the Department of Agriculture, for the Control of Witches' Broom Disease of Cacao, by Dr. B. G. Montserin and L. L. de Verteuil.

*Quantity means number of bags, crates, items, &c., which vary in weight from less than one pound, to two hundred pounds.

The following appeared as supplements of the *Journal of the Agricultural Society of Trinidad and Tobago*:—

Carenage Fishing Centre—A "Combined Operation", by W. A. King-Webster, Fishery Officer, (56:1, 114-117).

Care and Management of Dairy Goats in Trinidad and Tobago, by J. L. Shannon, D.V.M. revised by F. O. Gonzales, M.R.C.V.S., B.Sc. (vet.sc.), B.Sc. (Agric.), D.I.C.T.A. and P. J. Dominique, Senior Agricultural Assistant, St. Joseph Farm (56:1, 118-134).

Short Notes on some Spraying Machines, by L. G. Campbell, Agricultural Engineer (56:1, 135-138).

The Role of the Veterinarian in Public Health, by L. V. Butcher, D.V.M., M.P.H. (56:2, 2-5).

Preliminary Studies on Sprinkler Irrigation at the Government Stock Farms in Trinidad and Tobago, by L. G. Campbell, Agricultural Engineer (56:3, 6-10).

CONFERENCES, MEETINGS, TOURS, ETC.

Conferences and Meetings

The Department of Agriculture was represented by various officers at a number of conferences and meetings as shown below.

Fourth Meeting of Advisory Council on Agriculture, Animal Health and Husbandry, Forestry and Fisheries held in St. Vincent in April, 1956—

MR. C. H. B. WILLIAMS, Director of Agriculture.

DR. L. R. HUTSON, Deputy Director (Animal Husbandry).

Sixth Meeting of Inter-American Technical Cacao Committee held in Salvador, Bahia, Brazil, in May, 1956—

DR. B. G. MONTSERIN, Deputy Director (Research).

During the period July-October, Mr. C. H. B. Williams attended two meetings in London of the Governing Body of the Imperial College of Tropical Agriculture.

The Third International Congress on Animal Reproduction held at Cambridge, England in June—

DR. H. E. WILLIAMS, Veterinary Officer.

F.A.O./O.I.E. Meeting on the Control of Tick-borne Diseases of Livestock held in Rome in July—

DR. H. E. WILLIAMS, Veterinary Officer.

Meeting of British Caribbean Veterinary Association in Jamaica during July-August—

DR. F. O. GONZALEZ, Veterinary Officer.

Inter-American Veterinary Medical Symposium held at Puerto Rico in December—

DR. L. R. HUTSON, Deputy Director (Animal Husbandry).

Scholarships, Fellowships and Study Leave

The following officers were granted scholarships and study leave:—

Dr. L. V. Butcher, Veterinary Officer—Fellowship course awarded by the Pan American Sanitary Bureau for study in the field of Communicable diseases, Rabies control and Diagnosis, from March to June.

Mr. J. O. Slocombe, Agricultural Assistant, was granted a Veterinary Scholarship in September, 1956, tenable at the Ontario College, Canada.

Mr. H. McK. Jeffers, Agricultural Assistant, was granted an Agricultural Scholarship in September, 1956 to major in Animal Husbandry at MacDonald College, Canada.

Mr. W. S. Searle, Field Assistant was granted 4 years' no-pay study leave to take B.Sc. degree in Agriculture.

Dr. W. P. Unsworth, Veterinary Officer, was granted 1 year's full-pay study leave to pursue a course in Animal Genetics, at Edinburgh University.

Mr. J. S. Kenny, Fish Culturist returned to the Colony after having obtained his B.A. degree at the University of Toronto, Canada.

Advisers to other Colonies

Mr. J. A. Spence, Plant Pathologist, visited Martinique in early December to advise "Centre Technique de la Canne et du Sucre de la Martinique" on incidence of Leaf Scald Disease in certain cane plantations in that island.

Dr. B. G. Montserin visited Jamaica during August-September in order to advise that Government on their cocoa expansion programme.

Overseas Tours and Courses

A Tour to study Soil Conservation in St. Vincent was made in May by Mr. K. D. Guyadeen, Agricultural Officer.

A Course in Agricultural Extension at Wageningen (The Netherlands) during July and August was attended by Mr. R. E. Greaves, Senior Agricultural Assistant.

A Coffee Demonstration Tour in Jamaica in August was attended by Mr. L. L. de Verteuil, Cacao Agronomist.

STAFF

Promotions, recruitments, transfers, retirements and resignations from 1st January, 1956 to 28th February, 1957 are outlined hereunder:—

<i>Name</i>		<i>Post</i>	<i>Effective Date</i>
<i>Promotions</i>			
E. S. CAPSTICK	...	Permanent Secretary, Ministry of Agriculture, Lands and Fisheries	1. 1. 56
I. HOSEIN	...	Agronomist, Fruit Crops	1. 1. 56
P. J. DOMINIQUE	...	Agricultural Officer	17. 1. 57
S. REDMAN	...	Senior Agricultural Assistant	28. 1. 57
G. KHAN	...	Senior Agricultural Assistant	1. 10. 56
D. DAVIES	...	Agricultural Assistant	1. 1. 56
R. ALI	...	Agricultural Assistant	3. 1. 56
L. KHAN	...	Agricultural Assistant	1. 5. 56
J. RAMKISSOON	...	Agricultural Assistant	1. 11. 56
P. BARRAN	...	Agricultural Assistant	1. 11. 56
N. KHAN	...	Agricultural Assistant	15. 11. 56
<i>Recruitments</i>			
D. TOOLSIE	...	Agricultural Assistant	3. 7. 56
M. DOOKERAN	...	Agricultural Assistant	3. 7. 56
L. GOBERDHAN	...	Agricultural Assistant	1. 3. 57
L. J. JAMES	...	Senior Agricultural Assistant	1. 8. 56
<i>Retirements</i>			
P. O. HOSTEN	...	Agricultural Officer	17. 1. 57
C. H. B. WILLIAMS	...	Director of Agriculture	20. 2. 57
<i>Resignations</i>			
I. E. TELFER	...	Senior Agricultural Assistant	27. 1. 57

AGRICULTURAL LEGISLATION

AGRICULTURAL CREDIT SOCIETIES	Date	References	Remarks
Gazette Notice No. 739—Agricultural Rent Board, Tobago	16th April, 1956	... Rents of small Agricultural Holdings Ordinance, Ch. 23 No. 20 (Sec. 3 (5)).	Appointment of Mr. C. E. Warner as Assistant Secretary of the Agricultural Rent Board, Tobago
Ordinance No. 22—1956—Agricultural Credit Bank (Amendment) Ordinance	26th September, 1956	Agricultural Credit Bank Ordinance, Ch. 23. No. 5	An Ordinance to amend further the Agricultural Credit Bank Ordinance, Ch. 23 No. 5.
Ordinance No. 39—1956—Agricultural Credit Societies (Amendment) Ordinance, 1956	1st August, 1956	... Agricultural Credit Societies Ordinance, 1954	An Ordinance to amend the Agricultural Credit Societies Ordinance, 1954
Government Notice No. 141—The Agricultural Credit Societies' (Amendment) Regulations, 1956	18th September, 1956	Section 73 of the Agricultural Credit Societies Ordinance, 1954	Regulations made by the Governor in Council under Section 73 of the Agricultural Credit Societies Ordinance, 1954
Gazette Notice No. 1880—Agricultural Rent Board, Tobago	3rd October, 1956	... Section 3 (5) of the Rents of Small Agricultural Holdings Ordinance, Ch. 23 No. 20	Appointment of Mr. I. W. Carter as Secretary
Cocoa Gazette Notice No. 993—Cocoa Board—Acting Appointment of Member	17th May, 1956	... Section 4 (1) of the Cocoa Industry Ordinance, Ch. 23 No. 16	Appointment of Dr. J. L. Jolly to act as a Member
Gazette Notice Nos. 1172, 1173—Acting Appointments on Cocoa Board	6th June, 1956	... Section 4 (1) of the Cocoa Industry Ordinance, Ch. 23 No. 16	Appointments of Mr. J. C. Muir and Mr. A. V. Stollmeyer to act as Members
Gazette Notice No. 1576—Cocoa Pool, 1955-1956. Fixing of period	23rd August, 1956	... Exportation of Cocoa Ordinance, Ch. 23 No. 21 as amended by Section (2) of the Exportation of Cocoa (Amendment) Ordinance, No. 24 of 1954	Cocoa Pool—1st September, 1955 to 31st August, 1956 fixed as the period during which net proceeds of cocoa may be paid to Accountant General
Gazette Notice No. 1577—Cocoa Pool	23rd August, 1957	... Exportation of Cocoa Ordinance, Ch. 23 No. 21 as amended by Section (2) of the Exportation of Cocoa (Amendment) Ordinance No. 24 of 1954	Distribution for the period 1st September, 1955 to 31st August, 1956

AGRICULTURAL LEGISLATION—CONTINUED

	Date	References	Remarks
Sugarcane Gazette Notice No. 142—Interim Price for Farmers' Canes—1956	19th January, 1956	Section 9 (1)(a) of the Production of Cane Ordinance, Ch. 23 No. 12	Fixing of Price
Government Notice No. 20—Sugar Quotas Order, 1956	31st January, 1956	Sugar Quotas Ordinance, Ch. 23 No. 13	Sugar Quotas for various estates given
Gazette Notice No. 1032—Sugar Industry Labour Welfare Fund Committee	22nd May, 1956	Section 9 (2) of the Sugar Industry Special Funds Ordinance, Ch. 23 No. 14	Appointment of Alderman Eric Crawford, O.B.E. as Chairman
Ordinance No. 18—1956—Sugar Industry Special Funds (Amendment) Ordinance, 1956	5th June, 1956	Sugar Industry Special Funds Ordinance, Ch. 23 No. 14	An Ordinance to amend subsection (2) of Section 9 of the Principal Ordinance by inserting immediately after the word "appointment" occurring in paragraph (b) thereof the words "and remuneration"
Gazette Notice No. 1378—Sugar Industry Price Stabilisation Fund Committee	11th July, 1956	Regulation 10 (1) of the Sugar Industry (Price Stabilisation) Regulations 1951–1953	Appointment of Mr. Bodan Chinabas to serve as representative
Gazette Notice No. 1379—Sugar Industry Price Stabilisation Fund Committee	13th July, 1956	Regulation 10 (1) of the Sugar Industry (Price Stabilisation) Regulations 1951–1953	Appointment of Mr. Jaffar Ali to serve as representative
Gazette Notice No. 1540—Sugar Industry Rehabilitation Fund Committee	8th August, 1956	Regulation 7 (2) of the Sugar Industry (Rehabilitation Committee) Regulations	Appointment of Mr. D. Andrews and Mr. R. Spink to act as members
Government Notice No. 161—Price of Farmers' Canes	27th November, 1956	Production of Cane Ordinance, Ch. 23 No. 12	Rules for fixing prices
Animals (Diseases and Importation) Government Notice No. 79—1956—The Animals (Importation) Control (Amendment) Regulations, 1956	18th May, 1956	Section 15 of the Animals (Diseases and Importation) Ordinance, 1954	Regulations made by the Governor in Council under Section 15 of the Animals (Diseases and Importation) Ordinance, 1954 to be cited as the Animals (Importation) Control (Amendment) Regulations, 1956

AGRICULTURAL LEGISLATION—CONTINUED

	Date	References	Remarks
Animals (Diseases and Importation) — <i>Continued</i> Government Notice No. 124—Animals (Importation) Control (Amendment No. 2) Regulations, 1956	28th August, 1956 ...	Section 15 of the Animals (Diseases and Importation) Ordinance, 1954	Regulations made by the Governor in Council under Section 15 of the Animals (Diseases and Importation) Ordinance, 1954 to be cited as the Animals (Importation) Control (Amendment No. 2) Regulations, 1956
Government Notice No. 160—Animals (Importation) Control (Amendment No. 2) Regulations, 1956	23rd November, 1956	Section 15 of the Animals (Diseases and Importation) Ordinance, 1954	Regulations made by the Governor in Council under Section 15 of the Animals (Diseases and Importation) Ordinance, 1954 to be cited as the Animals (Importation) Control (Amendment No. 2) Regulations, 1956
Fish Government Notice No. 55—1956—Fishing Industry (Assistance) Ordinance Regulations, 1956	3rd May, 1956 ...	Fishing Industry (Assistance) Ordinance, 1955	Regulations made by the Governor in Council under Section 3 of the Fishing Industry (Assistance) Ordinance, 1955 to be cited as the Fishing Industry (Assistance) Regulations, 1956
Wild Animals and Birds Government Notice No. 76—1956—Wild Animals and Birds (Game Wardens) (Amendment) Regulations, 1956	15th May, 1956 ...	Wild Animals and Birds (Protection) Ordinance, Ch. 25 No. 7	Regulations made by the Governor in Council under Section 24 of the Wild Animals and Birds (Protection) Ordinance to be cited as the Wild Animals and Birds (Game Wardens (Amendment) Regulations, 1956

Table I—Annual Rainfall, Trinidad and Tobago

Station					Total 1956, inches	Mean 25 Years inches
<i>North Trinidad :</i>						
River Estate, Diego Martin	...	...	...	...	67.79	76.03
St. Clair, Port-of-Spain	...	...	...	...	56.78	66.93
The Camp, St. James	...	...	...	...	54.54	*—
La Pastora, Santa Cruz	...	...	...	...	77.85	86.30
I.C.T.A., St. Augustine	...	...	...	...	58.22	69.15
Meteorological Station, Piarcro	...	...	...	...	76.72	69.97
Frederick Estate, Caroni	...	...	...	...	59.48	78.26
Torrecilla Estate, Arima	...	...	...	...	87.10	93.64
Works and Hydraulics, Toco	...	...	...	...	63.45	71.14
Hollis Reservoir, Valencia	...	...	...	...	123.69	120.78
San Souci Estate, Sangre Grande	...	...	...	...	125.98	111.88
<i>Central Trinidad :</i>						
Waterloo Estate	...	...	...	...	72.79	65.67
Todd's Road Estate	...	...	...	...	78.33	77.02
Tamana Teak Plantation...	...	...	...	...	121.03	114.00
McBean Estate, Couva	...	...	...	...	66.62	65.98
Forres Park Estate, Claxton Bay	...	...	...	...	68.00	62.15
New Lands Estate, Biche	...	...	...	...	124.44	106.35
Marper Farm, Manzanilla	...	...	...	...	115.29	102.42
Brasso-Tamana Road	...	...	...	...	109.64	103.26
Cocal Estate, Nariva	...	...	...	...	79.42	*—
Navet C.M. School	...	...	...	...	82.76	*—
<i>South Trinidad :</i>						
Brothers Estate, Williamsville	...	...	...	...	80.64	81.63
Usine Ste. Madeleine, San Fernando	...	...	...	...	75.72	68.59
Perseverance Estate, Cedros	...	...	...	...	70.54	58.96
Poole Syndicate, Rio Claro	...	...	...	...	108.39	108.04
Point Fortin Filtration Plant	...	...	...	...	80.78	79.65
T.L.L., Barrackpore	...	...	...	...	75.27	72.26
Mayaro Police Station, Mayaro	...	...	...	...	78.27	81.10
Moruga Police Station, Moruga	...	...	...	...	81.62	72.03
T.L.L., Guayaguayare	...	...	...	...	117.48	89.35
Siparia Old Road, Fyzabad	...	...	...	...	89.98	68.41
<i>Tobago :</i>						
Botanic Gardens	...	...	...	...	65.30	78.31
Government Farm	...	...	...	...	64.07	62.21
Hermitage Estate	...	...	...	...	91.17	95.52
Friendship Estate	...	...	...	...	55.85	*—
Green Hill Estate	...	...	...	...	87.09	*—
Kendal Estate	...	...	...	...	64.11	122.16

NOTE—*—New Stations.

Table II—Mean Monthly Rainfall, Trinidad and Tobago

Month					1956, Inches	25-Year Mean, Inches
January	...	...	...	...	5.1	4.7
February	...	...	...	...	4.4	3.3
March	...	...	...	...	3.9	2.5
April	...	...	...	...	4.0	2.9
May	...	...	...	...	5.4	6.1
June	...	...	...	...	8.4	10.5
July	...	...	...	...	5.6	10.2
August	...	...	...	...	11.7	10.6
September	...	...	...	...	8.2	8.0
October	...	...	...	...	9.0	7.9
November	...	...	...	...	8.1	9.5
December	...	...	...	...	8.6	9.0
					82.4	85.2

Table III—Output of Fresh Fruit and Canned Products—Co-operative Citrus Growers' Association

				Grapefruit	Orange	Blended
(a)	Juice produced in 1956—Cartons A2 Cans	...	393,920	107,211	23,509	
(b)	Juice sold locally in 1956—Cartons A2 Cans	...	97,244	22,700	5,278	
(c)	Juice exported in 1956—Cartons A2 Cans	...	297,984	70,883	8,445	
(d)	Fresh Fruit exported in 1956—Crates	...	96,183½	8,029¾	—	

Table IV—Imports of Specified Commodities, 1956

UNIT	CARIBBEAN		NON-CARIBBEAN	
	Quantity	Value	Quantity	Value
Live animals chiefly for food ... only	15,153	\$ 67,881	197,474	\$ 68,319
Meat, fresh, chilled or frozen ... lb.	47,825	26,063	10,488,033	4,716,775
Meat, dried, salted or smoked, not canned lb.	6,325	3,213	4,996,154	2,010,123
Meat canned and meat preparations, canned and not canned lb.	24	14	2,511,253	1,800,131
Milk and cream, fresh lb.	—	—	29,401	9,402
Milk and cream, evaporated, condensed or dried lb.	—	—	22,131,716	7,781,703
Butter lb.	—	—	2,682,746	1,968,669
Eggs in the shell and other ... —	—	—	—	287,324
Rice lb.	35,722,498	4,007,105	5,600,750	557,289
Maize (corn) unmilled lb.	—	—	3,865,534	259,857
Meal and flour of wheat lb.	—	—	111,655,715	9,766,575
Meal and flour of maize (and of cereals, n.e.s. (negligible) lb.	—	—	878,751	83,430
Fresh and dry vegetables, roots and tubers lb.	8,621,151	317,115	40,602,469	3,161,159
Fruits and nuts, fresh lb.	753,498	99,769	2,201,878	713,560
Fish, fresh, chilled or frozen ... lb.	15,966	16,110	128,694	70,264
Cod Fish (salted fish) lb.	—	—	6,127,882	1,922,289
Other fish (salted, dried or smoked) lb.	1,303	1,290	731,272	204,313
Fish, canned lb.	—	—	1,626,359	1,089,112

Table V—Agricultural Exports, Trinidad and Tobago, 1956

	Unit	Quantity	Value	Value
			\$	\$
<i>Sugar and By-Products</i>				
Sugar (unrefined)	Cwt.	2,751,968	25,116,851	
Sugar (refined)	Lb.	73,125	9,981	
Molasses, inedible (raw)	Cwt.	575,905	571,751	25,698,583
<i>Cacao</i>				
Cacao beans	Cwt.	194,971	10,485,241	
Cacao butter	Lb.	81,918	52,610	
Cacao powder	"	7,435	4,441	10,542,292
<i>Citrus</i>				
Lime juice (raw)	Liq. gal.	4,027	3,109	
Lime juice (concentrated)	"	208	1,186	
Limes, fresh	Lb.	10,079	1,383	
Grapefruit, fresh	"	7,967,177	497,683	
Oranges, tangerines and mandarins	"	5,464,979	412,739	
Canned grapefruit juice	Liq. gal.	915,402	1,201,374	
Canned orange juice	"	215,064	391,728	
Canned orange and grapefruit juice, mixed	"	28,001	43,740	2,552,942
<i>Tonca Beans</i>				
Tonca Beans	Lb.	184,286	324,838	324,838
<i>Rubber</i>				
Rubber, raw	Lb.	129,568	71,202	71,202
<i>Coffee</i>				
Coffee, raw	Cwt.	29,436	1,571,566	1,571,566
<i>Coconuts and Derivatives</i>				
Coconut oil (unrefined)	Lb.	8,198	2,262	
Coir fibre	"	267,700	23,138	
Copra	Cwt.	21,635	326,034	351,434
<i>Vegetables</i>				
Vegetables, fresh and dry	Lb.	572,603	158,145	
Peas, beans, lentils, &c.	"	—	—	158,145
<i>Fresh Fruit, Other Sorts</i>				
Fresh fruit, other sorts	Lb.	575,125	103,041	
Bananas	"	7,667,481	424,277	527,318
<i>Livestock and Hides</i>				
Live animals, chiefly for food	No.	8,662	4,911	
Live animals, other than for food	"	651,055	91,656	
Hides	Lb.	—	—	96,567
<i>Honey</i>				
Natural Honey	Lb.	15,710	3,376	3,376
<i>Milk</i>				
Milk and Cream, fresh	Lb.	40,170	8,505	8,505
<i>Spices</i>				
Nutmeg	Lb.	60,103	44,936	
Mace	"	720	1,875	
Pepper and Pimento	"	1,098	259	
Ginger and other spices	"	17,131	10,143	57,213
TOTAL				\$41,963,981

**Table VI—Exports of Manufactured Agricultural Products,
Trinidad and Tobago, 1956**

	Unit	Quantity	Value	Value
			\$	\$
<i>Sugar and By-Products</i>				
Rum	P. gal.	382,750	1,354,128	
Syrup and Molasses	Lb.	460	114	1,354,242
<i>Citrus</i>				
Lime oil (distilled)	Lb.	13,547	94,116	94,116
<i>Coffee</i>				
Coffee (prepared)	Lb.	45,401	45,659	45,659
<i>Coconuts and Derivatives</i>				
Coconut oil (refined)	Lb.	2,340,412	627,623	
Lard Substitute	"	118,620	43,975	671,598
<i>Vegetable and Animal Products</i>				
Margarine (vegetable, animal or mixed)	Lb.	793,690	317,129	
Other sorts of lard substitute	"	68,760	25,920	343,049
<i>Soap</i>				
Acid, fatty and solid oils including—				
Stock Soap	Lb.	—	—	—
Hard Soap	"	853,697	157,472	157,472
<i>Bitters</i>				
Bitters	Liq. gal.	82,291	943,416	943,416
<i>Jam, Marmalade and Fruit Jellies</i>				
Jam, marmalade and fruit jellies	Lb.	7,050	1,659	1,659
<i>Wine</i>				
In bottle	Liq. gal.	4,428	11,076	
In wood	"	1,669	2,947	14,023
TOTAL				\$3,625,234

Table VII—Trinidad Crop Statistics—Sugar

	1956	1955
Estates' canes ground	1,062,313 tons (65.13%)	1,183,687 tons (64.76%)
Farmers' canes ground	568,790 tons (34.87%)	644,036 tons (35.24%)
Total canes ground	1,631,103 tons	1,827,723 tons
Sugar output	160,230 tons	192,793 tons
Tons cane per ton sugar	10.18 tons	9.48 tons
Estates acreage reaped	40,918 acres	39,001 acres
Estates average cane yield per acre	25.96 tons	30.35 tons

Table VIII—Exports and Value of Raw Cacao, Trinidad and Tobago

Year					Exports	Value
					lb.	\$
1951	...	...	...	...	19,316,640	11,563,270
1952	...	...	...	...	14,087,360	8,237,141
1953	...	...	...	...	21,684,496	11,720,925
1954	...	...	...	...	17,640,784	15,047,820
1955	...	...	...	...	16,459,744	11,773,390
1956	...	...	...	...	21,836,752	10,485,241

Table IX—Analysis of Orchards according to Age Groups

Age Group		Acreage in Grapefruit	% of Total Acreage in Grapefruit	Acreage in Orange	% of Total Acreage in Orange
Under 1 year	...	138	3	191	4
1 to 4 years	...	413	9	1,259	26
4 to 8 years	...	780	17	1,400	29
Over 8 years	...	3,273	71	2,020	41
TOTAL	...	4,604	100	4,870	100

Table X—Number of Orchards in accordance with Acreage Groups

Acreage					Orchards
Under 5 acres	...	...	...	...	663
6 to 10 acres	...	...	...	...	123
11 to 20 acres	...	...	...	...	82
21 to 30 acres	...	...	...	...	39
31 to 40 acres	...	...	...	...	15
41 to 50 acres	...	...	...	...	13
51 to 100 acres	...	...	...	...	26
Over 100 acres	...	...	...	...	13
TOTAL	...	...	...	...	974

Table XI—Analysis of Orchards in accordance with Acreage Groups

Acreage Groups						% Total No. of Orchards	% Total Acreage in Citrus
Under 5	...	...	...	...	...	68.07	16.07
6 to 10	...	...	...	...	...	12.63	9.47
11 to 20	...	...	...	...	...	8.42	12.42
21 to 30	...	...	...	...	...	4.01	9.44
31 to 40	...	...	...	...	...	1.54	5.01
41 to 50	...	...	...	...	...	1.33	5.71
51 to 100	...	...	...	...	...	2.67	17.38
Over 100	...	...	...	...	...	1.33	24.27
Interplanted	...	...	...	...	...		0.23
TOTAL						100.00	100.00

Table XII—Crown lands recommended for Probationary Agreements and 25-year Leases

	No. 1950- 55	Acreage 1950-55			No. 1956	Acreage 1956			Total No. 1950- 56	Total Acreage 1950-56		
		A.	R.	P.		A.	R.	P.		A.	R.	P.
<i>Probationary Agreements</i>												
Recommended and executed	288	2,655	0	14	26	204	3	30	314	2,860	0	04
Recommended and awaiting execution	—	—	—	—	57	340	2	35	57	340	2	35
<i>25-year leases</i>												
Recommended and executed	41	937	1	35	2	10	3	39	43	948	1	34
Recommended and awaiting execution	—	—	—	—	10	144	0	24	10	144	0	24
TOTAL	329	3,592	2	09	95	700	3	08	424	4,293	1	17

Table XIII—Pattern of Crown Land Distribution

County				Under 3 and 3-5 Acres	5-10 Acres	10-20 Acres	20-50 Acres	Over 50 Acres	Total
St. Andrew-St. David	...	...	...	42	60	34	12	5	153
St. George-Caroni	...	...	...	35	37	30	13	4	119
Nariva-Mayaro	...	...	...	9	25	11	—	1	46
Victoria-St. Patrick	...	...	...	14	23	12	4	—	53
No. of FARMERS	...	...	...	100	145	87	29	10	371

Table XIV—Total Distribution of Vegetable and Ornamental Seedlings for 1953-1956

	1953	1954	1955	1956
Vegetable seedlings (boxes)	7,971	7,617	9,808	9,094
Ornamental seedlings (boxes)	5,998	6,868	8,783	9,328
TOTAL	13,969	14,485	18,591	18,422

Table XV—Sugar cane varieties—Per cent. of total acreage reaped. (Sugar cane Estates only) 1952-1956

Variety	1952	1953	1954	1955	1956
B. 3337	38.3	36.1	34.0	31.5	28.4
B. 37172	12.1	20.5	27.7	30.8	28.2
B. 37161	21.1	21.2	20.7	20.6	23.0
B. 34104	22.7	16.9	12.4	6.8	4.4
B. 41227	0.8	0.6	0.7	3.6	8.7
B. 4362	0.1	0.9	1.2	2.7	3.1
Others	4.9	3.8	3.3	6.0	4.2

Table XVI—Sugar cane varieties—Per cent. of Plant cane acreage reaped (Sugar Estates only) 1956

Variety	Per cent.
B.37161	34.38
B.41227	23.51
B.37172	18.45
B.3337	12.05
B.4362	4.67
B.34104	3.01
Others	3.93
TOTAL	100.00

Table XVII—Correlation between Yields and Percentage of Borer Infestation

Variety	Weight per Acre	% Tillers Bored	% Canes Bored	% Joints Bored
B. 37172	31 tons, 0 cwts. 1 qr.	15.2	67.8	8.9
B. 4098	25 tons, 10 cwts. 3 qrs.	14.8	65.6	8.8
B. 3337	24 tons, 10 cwts. 3 qrs.	17.7	64.9	9.4
B. 37161	24 tons, 19 cwts. 1 qr.	18.3	72.2	11.1
B.H. 10/12	20 tons, 5 cwts. 2 qrs.	29.6	83.8	13.2

Table XVIII—Distribution by Size of Estate, of approved Applications for Cocoa Subsidy, 1953-1956

	At the end of 1953	At the end of 1954	At the end of 1955	At the end of 1956
Properties under 25 acres	1,652	2,449	2,898	3,633
Properties under 25/50 acres	262	348	379	440
Properties over 50 acres	447	508	548	600
TOTAL	2,361	3,305	3,825	4,673

Table XIX—Demand and Allocation—Clonal Cacao Plants

	1953	1954	1955	1956	1957
Trinidad	851,287	1,159,280	1,540,203	2,079,288	2,193,506
Tobago	57,866	106,553	175,694	260,275	270,226
Allocation	483,257	550,702	713,096	947,503	1,409,808
Actual Distribution	400,709	484,094	654,219	1,040,693	—

Table XX—Distribution to Planters—Composition by Varieties

	TOBAGO	TRINIDAD			COLONY AVERAGE			
		From La Pastora	From La Reunion	From Marper	From Estate Props.	1956	1955	1954
	%	%	%	%	%	%	%	%
ICS. 1	2.76	2	.5	1.1	11.09	3.08	4.71	15.76
ICS. 6, 8	1.39	6	2.2	—	.51	3.39	2.11	3.84
ICS. 39, 40	13.38	3	6.2	—	1.23	4.48	5.90	7.59
ICS. 60	1.36	.8	1	—	.54	.82	2.28	1.56
ICS. 89	4.66	2.5	2.7	—	1.80	2.56	.92	1.06
ICS. 95	49.76	34.1	33.9	55	54.53	40.94	51.82	53.76
IMC. 67	17.50	42.4	33	31.8	21	30.38	21.45	11.26
Other Amazons	0.5	3.0	8.0	9.4	1.6	4.35	10.81	5.37
Other Types	8.69	6.2	12.5	2.7	7.7	10.00		

Table XXI—Manuring Subsidy

				Number of Planters Supplied	Total Issued Tons
1952	...	...	...	123	292
1953	...	...	...	343	511
1954	...	...	...	525	748
1955	...	...	...	1,378	1,057
1956	...	...	...	1,987	1,331

Table XXII—Distribution, by size of Estate, of approved Applications for Cacao Replacements, 1953-1956

				At the end of 1953	At the end of 1954	At the end of 1955	At the end of 1956
Estates under 25 acres	...	...	...	1,493	1,933	2,022	2,064
Estates 25/50 acres	...	...	...	274	347	362	369
Estates over 50 acres	...	...	...	276	318	329	333
TOTAL	...	...	...	2,043	2,596	2,713	2,766

Table XXIII—Cost per Plant Production

				1953	1954	1955	1956	Average
				\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Colony Average	...	...	...	67	74	91	76	77
Average Central Station	...	...	...	70	71	90	82	78
Average Estate Propagators	...	...	...	63	77	92	53	71
La Pastora	...	...	...	71	72	84	85	78
La Reunion	...	...	...	—	61	91	80	77
Marper	...	...	...	68	78	94	76	79

Table XXIV—Revenue Figures, 1956

Division							Amount
							\$ c.
St. Augustine Station	...	...	...	...	...	...	78,822 99
Botanic Station, Tobago	...	...	...	...	...	...	2,532 73
Central Experiment Station	...	...	...	...	...	...	95,899 34
District Services	...	...	...	...	...	...	51,610 99
Marper	...	...	...	...	...	...	8,358 26
Fisheries	...	...	...	...	...	...	299 54
Apiaries	...	...	...	...	...	...	92 70
St. Joseph Farm	...	...	...	...	...	...	139,225 59
Tobago Farm	...	...	...	...	...	...	48,651 38
Land Settlement	...	...	...	...	...	...	18,884 96
Rice	...	...	...	...	...	...	5,653 23
							\$449,931 71

Table XXV—Summary of notifiable Livestock diseases occurring in the Colony

Disease						No.
Johnes Disease	...	...	...	...	...	1 case
Mange, Equine	...	...	...	...	...	1 case
Newcastle Disease	...	...	...	...	...	11 outbreaks
Piroplasmosis Bovine...	...	...	...	...	...	1 case
Rabies (Paralytic)—Bat transmitted	...	...	...	...	...	3 cases
Swine Erysipelas	...	...	...	...	...	1 outbreak
Tuberculosis—						
No. of cattle tested	...	...	4,067	...	...	.51% reactors
No. of water buffalo tested	...	...	71	...	...	7.8% reactors

Table XXVI—Numbers, Classes and Percentages of Reactors, to Tuberculin Tests 1954-1956

Class of Livestock		1954		1955		1956	
		No.	% Reactors	No.	% Reactors	No.	% Reactors
Cattle	...	3,249	0.4	3,291	0.4	4,067	—
Water Buffalo	...	—	—	170	3.5	77	—
Dairy Goats	...	93	0.0	57	—	—	—
Pigs	...	35	0.0	—	—	—	—
Poultry	...	—	—	—	—	—	—

Table XXVII—Total Services by selected Sires, 1956

Class of Sire				Trinidad	Tobago	Total
Stallion—Light Draft	...	...	...	3	8	11
Jacks	...	...	...	121	104	225
Bulls*	...	...	...	1,228	224	1,452
Water Buffalo	...	...	...	8	—	8
Boars	...	...	...	969	212	1,181
Bucks	...	...	...	1,173	243	1,416
Rams	...	...	...	—	92	92

*Does not include Artificial Insemination Figures.

Table XXVIII—Comparative Sales at Stock Farms, 1955-1956

Class of Sale				1955	1956	Increase	Decrease
Cattle	...	...	...	189	220	31	—
Horsekind	...	...	...	2	3	—	1
Pigs	...	...	...	516	441	—	75
Goats	...	...	...	30	29	—	1
Sheep	...	...	...	41	59	18	—
Poultry	...	...	...	2,077	12,200	10,123	—
Eggs	...	...	...	36,452	80,507	44,055	—

Table XXIX—Comparative Total Livestock strength—Stock Farms, 1955-1956

Class of Animal				1955	1956	Increase	Decrease
Cattle	...	...	...	610	600	—	10
Water Buffalo	...	...	...	16	27	11	—
Horsekind	...	...	...	78	104	26	—
Pigs	...	...	...	342	213	—	129
Goats	...	...	...	150	158	8	—
Sheep	...	...	...	112	100	—	12
Poultry	...	...	...	2,544	1,570	—	974

Table XXX—Milk yield—St. Joseph Farm, 1952-1956

Year				Average No. of Cows milked daily	Total Annual yield	Daily average yield per cow
					lb.	
1952	...	...	...	64	654,716	28
1953	...	...	...	66	574,333	24
1954	...	...	...	72	598,840	23
1955	...	...	...	69	553,219	22
1956	...	...	...	64	535,329	23

Table XXXI—Horsekind strength on Stock Farms—31st December, 1956

Class of Animal							Number
Stallions—Light Draft	...	...	...	...	...	...	2
Mares	...	...	...	...	...	...	23
Fillies	...	...	...	...	...	...	4
Geldings	...	...	...	...	...	...	3
Mules	...	...	...	...	...	...	20
Jacks	...	...	...	...	...	...	26
Janets	...	...	...	...	...	...	26
Total	...	...	...	...	...	...	104

Table XXXII—Pig strength on Stock Farms—31st December, 1956

Breed			Boars	Sows	Young Stock	Total
Large Black	...	...	16	37	83	136
Berkshire	...	...	25	11	41	77
Total	...	...	41	48	124	213

Table XXXIII—Goat Strength on Stock Farms—31st December, 1956

Breed	Bucks	Does	Total
British Alpine	35	26	61
Anglo-Nubian	25	7	32
Grade British Alpine	2	1	3
Grade Anglo-Nubian	15	45	60
TOTAL	77	79	156

Table XXXIV—Poultry Strength on Stock Farms—31st December, 1956

Class and Breed	Cocks	Hens	Chicks	Drakes	Ducks	Ducklings
Rhode Island Red ...	37	423	606	—	—	—
White Leghorn ...	17	53	58	—	—	—
White Rock ...	17	134	157	—	—	—
Muscovy ...	—	—	—	17	42	9
TOTAL ...	71	610	821	17	42	9

Table XXXV—Figures of Fish handled at the Port-of-Spain Fish Market during the Period—1st January to 31st December, 1956

Locality	Weight in lb.	% of Total	Species	Weight in lb.	% of Total	Price per lb.	Value
Cedros ...	1,416,821	36	Carite and King ...	1,937,096	49		\$ 561,425 66
Port-of-Spain ...	1,481,205	38	Herring ...	269,291	7	6.89	18,536 58
Carenage ...	218,284	6	Cavalli ...	135,506	3	26.30	35,642 48
Maracas ...	278,581	7	Red ...	213,946	6	42.36	90,635 53
Blanchisseuse ...	48,503	1	Shark ...	338,569	9	14.99	47,385 57
Moruga ...	65,545	2	Salmon ...	107,708	3	24.09	25,951 43
San Fernando ...	55,537	1	Paoua ...	48,461	1	22.44	10,875 35
Couva ...	129,934	4					
Mayaro ...	38,859	—					
Toco ...	60,274	2					
Miscellaneous ...	134,984	3	Miscellaneous	877,950	22		269,760 19
TOTAL ...	3,928,527	100		3,928,527	100		\$1,060,232 79

Table XXXVI—Figures of Fish handled at the San Fernando Fish Market—1st August to 31st December, 1956

Locality	Weight in lb.	% of Total	Species	Weight in lb.	% of Total	Price per lb.	Value
Cedros ...	82,616	18	Carite and King ...	142,616	30	22.74	\$ 32,431 82
Port-of-Spain ...	1,047	—	Herring ...	218,590	46	5.09	11,129 04
Carenage ...	—	—	Cavalli ...	2,312	1	21.94	507 42
Maracas ...	—	—	Red ...	9,246	2	28.28	2,615 62
Blanchisseuse ...	—	—	Shark ...	8,186	2	11.79	965 13
Moruga ...	200	—	Salmon ...	6,966	1	17.75	1,237 08
San Fernando ...	377,019	80	Paoua ...	637	—	18.74	119 42
Couva ...	1,381	—					
Mayaro ...	—	—					
Toco ...	—	—					
La Brea ...	9,959	2					
Miscellaneous ...	192	—	Miscellaneous	83,861	18	20.35	17,068 68
TOTAL ...	472,414	100		472,414	100		66,074 21

Table XXXVII—Imports of Fish and Fish Preparations—1956

Commodity	Quantity lb.	Value
Codfish ...	6,127,882	\$ 1,922,289
Salmon and trout ...	55,999	33,942
Mackerel ...	60,337	15,863
Herring ...	483,145	85,807
Other (fish, salted, dried smoked but not further prepared)	133,094	69,991
Crustacea and molluses, fresh, chilled, frozen, salted, dried	46,139	35,774
Salmon ...	791,867	596,884
Sardines ...	609,391	372,511
Herrings ...	167,803	57,213
All other (fish and fish products, crustacea and molluses in airtight containers) n.e.s. (including fish paste) ...	57,298	62,504
Fish products (including cavier and substitutes for cavier) fish preparations n.e.s., crustacea and molluses prepared or preserved, not in airtight containers. ...	553	1,168

Table XXXVIII—Guaranteed Minimum Prices for Locally Grown Foods

	Price per lb.
Pigeon Peas, dry shelled ...	12 Cents
Black-Eye Peas, dry shelled ...	12 "
Soya Beans, dry shelled ...	12 "
Corn, dry shelled ...	5 "
Yams—Lisbon variety only ...	4 "
Sweet Potatoes ...	3 "
Tannias ...	3 "
Eddoes ...	1 "
Plantains—Fingers ...	4½ "
Do. —Stems ...	4 "
Bananas—Gros Michel and Sucrier ...	1½ "
Do. —Governor ...	1 "

Table XXXIX—Quantities of Produce Purchased by the Marketing Board

	1954 Short Tons	1955 Short Tons	1956 Short Tons
Corn	205	118	9
Produce other than corn	813	702	569
TOTAL	1,018	820	578

Table XL—Imports of Vegetables and Fruit from B.W.I. Territories

	1954 Short Tons	1955 Short Tons	1956 Short Tons
Sweet Potatoes	3,478	2,073	2,734
Yams	102	16	22
Other Vegetables	201	153	215
Plantains	240	108	62
Tomatoes	29	*	13
Fruit	1,392	799	58
TOTAL	5,442	3,149	3,104

*Not recorded.

Table XLI—Shipments of Food Crops from Tobago to Trinidad

	1954 Short tons	1955 Short tons	1956 Short tons
Bananas	73	24	46
Plantains	12	9	19
Ground Provisions	396	232	459
Corn	107	132	58
Peas	16	2	28
TOTAL	604	399	610

Table XLII—Sales of Fertilizers, Insecticides and Veterinary Medicines

	1954	1955	1956
Fertilizers (short tons)	305	419	389
Insecticides and Veterinary Medicines	\$3,381	\$6,894	\$9,814

Table XLIII—Sales of Livestock Feeds

	1954 Short Tons	1955 Short Tons	1956 Short Tons
Pig Ration	725	1,319	1,261
Dairy Ration	527	593	543
Poultry Ration	773	609	361
Scratch Grain	560	636	402
TOTAL	2,585	3,157	2,567

Table XLIV—Business Turnover, Marketing Board

						Business Turnover	Increase over previous Year's
						\$	%
1954	...	...	...	...	...	1,126,443	—
1955	...	...	...	...	...	1,256,237	12
1956	...	...	...	...	...	1,360,816	8

Table XLV—Production, Sales and Distribution—1956

					CONSUMPTION SALES		PLANTING OR BREEDING SALES	
					Number	Unit	Number	Unit
<i>Crops</i>								
Avocadoes	...	...	...	...	4,078	only	14,400	plant
Breadfruit	...	...	...	...	198	only	2,223	plant
Cacao	...	...	...	...	135,457	lb.	22,847	lb.
Coconuts	...	...	...	...	52,997	only	360	only
Coffee	...	...	...	...	14,914	lb.	1,482	plant
Grapefruit	...	...	...	...	152,367	only	147	plant
King Oranges	...	...	...	...	87	only	502	lb.
Lemons	...	...	...	...	3,125	only	175	plant
Limes	...	...	...	...	181	only	—	—
Mandarines	...	...	...	...	8,908	lb.	4,827	plant
Mangoes	...	...	...	...	2,482	only	255	plant
Oranges	...	...	...	...	2,629	only	6,621	plant
Other Fruit Trees	...	...	...	...	1,650,286	only	64,844	plant
Portugals	...	...	...	...	292	only	15,062	plant
Tangerines	...	...	...	...	3,200	only	1,497	plant
Other Fruits	...	...	...	...	—	—	255	plant
Bananas	...	...	...	...	1,457	only	—	—
	...	...	...	...	371,269	lb.	—	—
	...	...	...	...	5,357	stem	7,395	plant
	...	...	...	...	47,254	hand	17,911	lb.
	...	...	...	...	110	bunch	—	—
Beans	...	...	...	...	136	lb.	—	—
Cassava	...	...	...	...	39,500	lb.	536	cutting
Plantain	...	...	...	...	26,436	lb.	7,375	plant
Eddoes	...	...	...	...	4,662	lb.	—	—
Moko	...	...	...	...	362	lb.	12	sucker
Gourd	...	...	...	...	366 $\frac{1}{2}$	lb.	—	—
Samaan Seeds	...	...	...	...	—	lb.	—	—
Other Grass	...	...	...	...	18,502 $\frac{1}{2}$	lb.	4,880	lb.
	...	...	...	...	146	lb.	9 $\frac{1}{2}$	lb.
Kudzu	...	...	...	...	419 $\frac{1}{2}$	lb.	—	—
Cover Crops	...	...	...	...	20,345	lb.	—	—
Maize (corn)	...	...	...	...	20,453	only	115	lb.
	...	...	...	...	6,389	only	—	—
Peas—Pigeon	...	...	...	...	2,312 $\frac{1}{2}$	lb.	—	—
Peas—Other	...	...	...	...	876	lb.	2	lb.
Pumpkins	...	...	...	...	588	lb.	—	—
Rice—Milled	...	...	...	...	18,934	lb.	—	—
Rice—Paddy	...	...	...	...	104,243	lb.	—	—
Sugarcane	...	...	...	...	2,317	ton	—	—
Sweet Potatoes	...	...	...	...	4,711	lb.	—	—
Tannias	...	...	...	...	3,361	lb.	—	—

Table XLV—Production, Sales and Distribution, 1956—Continued

				CONSUMPTION SALES		PLANTING OR BREEDING SALES	
				Number	Unit	Number	Unit
<i>Crops</i>							
Timber, sq. ft. board	...	...	...	5		—	—
Vegetables (fresh)	...	...	...	1,710	head	—	—
				18,863	lb.	—	—
Vegetable seedlings	...	...	...	84,979	only	3,850	plant
Vegetable seedlings (boxes)	...	...	...	—	—	9,621	box
Yams	...	...	...	86,500	lb.	—	—
Lettuce	...	...	...	17,882	head	1/8	lb.
Cucumber	...	...	...	227	lb.	$\frac{1}{4}$	lb. seed
Ornamental seedlings (boxes)	...	...	...	—	—	8,925	box
Palms and ornamental shrubs	...	...	...	—	—	53,356	plant
Water Melon seeds	...	...	...	—	—	31/16	lb. seed
Tomatoes	...	...	...	664	lb.	1/8	lb.
Ochroes	...	...	...	5,720	only	—	—
Cauliflower seeds	...	...	...	10 $\frac{1}{2}$	lb.	1/8	lb.
<i>Stockfeed</i>							
Citrus Pulp Meal	...	...	...	3,839,490	lb.	—	—
Dairy Feed	...	...	...	1,086,685	lb.	—	—
Growing Mash	...	...	...	335,502	lb.	—	—
Laying Mash	...	...	...	352,260	lb.	—	—
Pig Ration	...	...	...	2,521,253	lb.	—	—
Scratch Grain	...	...	...	804,013	lb.	—	—
Broiler	...	...	...	33,334	lb.	—	—
Rice Husks	...	...	...	4,644	lb.	—	—
Raddish	...	...	...	—	—	$\frac{1}{4}$	lb.
Water Cress	...	...	...	12	bundle	—	—
Sweet pepper	...	...	...	19	lb.	—	—
Chlordane	...	...	...	2,708	pint	—	—
Fertilizers	...	...	...	777,448	lb.	—	—
Insecticides	...	...	...	\$8,888.81	Value	—	—
Veterinary Supplies	...	...	...	\$491.74	Value	—	—
Copra	...	...	...	35,524	lb.	—	—
Vegetables (miscellaneous)	...	...	...	446 $\frac{1}{4}$	lb.	—	—
Patchoi	...	...	...	14	lb.	—	—
Passi	...	...	...	84	lb.	—	—
Hot Pepper	...	...	...	550	only	—	—
Dry Wood	...	...	...	132	feet	—	—
Honey	...	...	...	177	pint	—	—
Manure	...	...	...	—	—	9	cub. yd.
<i>Cattle</i>							
Bulls	...	...	...	21	head	9	head
Cows	...	...	...	28	head	5	head
Steers	...	...	...	11	head	—	—
Bullcalves	...	...	...	28	head	24	head
Heifers	...	...	...	9	head	57	head
Beef	...	...	...	4,054	lb.	—	—
Milk	...	...	...	1,931	lb.	—	—
				111,549 $\frac{1}{4}$	gallon	—	—
				1,671 $\frac{1}{2}$	bottle	—	—
<i>Horses</i>							
Geldings	...	...	...	—	—	4	only
<i>Donkeys</i>							
Janets	...	...	...	—	—	2	only

Table XLV—Production, Sales and Distribution, 1956—Continued

				CONSUMPTION SALES		PLANTING OR BREEDING SALES	
				Number	Unit	Number	Unit
<i>Pigs</i>							
Boars ...	...	...	...	9	only	182	only
Sows ...	...	...	...	23	only	143	only
Barrows ...	...	...	...	11	only	—	—
Gilts ...	...	...	...	2	only	71	only
Piglets ...	...	...	...	26	only	549	only
<i>Sheep</i>							
Rams ...	...	...	...	1	only	—	—
Ewes ...	...	...	...	12	only	1	only
Ram Lambs ...	...	...	...	10	only	5	only
Ewe Lambs ...	...	...	...	10	only	3	only
Mutton ...	...	...	...	13½	lb.	—	—
Wetters ...	...	...	...	20	only	—	—
<i>Goats</i>							
Bucks ...	...	...	...	3	only	4	only
Does ...	...	...	...	7	only	4	only
Bucklings ...	...	...	...	1	only	2	only
Goatlings ...	...	...	...	1	only	7	only
Buck Kids ...	...	...	...	9	only	—	—
Doe Kids ...	...	...	...	3	only	—	—
Kids ...	...	...	...	12	only	7	only
Mutton ...	...	...	...	294½	lb.	—	—
Wetters ...	...	...	...	3	only	—	—
<i>Rabbits</i>							
Bucks ...	...	...	...	11	only	8	only
Does ...	...	...	...	6	only	9	only
Bunnies ...	...	...	...	10	only	13	only
<i>Poultry</i>							
Cocks ...	...	...	...	163	only	13	only
Hens ...	...	...	...	581	only	20	only
Pullets ...	...	...	...	45	only	602	only
Cockerels ...	...	...	...	191	only	419	only
Cockerels (exchange) ...	...	...	...	266	only	103	only
Chicks ...	...	...	...	739	only	10,822	only
Eggs ...	...	...	...	8,467-1/6	dozen	156-11/12	dozen
Drakes ...	...	...	...	43	only	11	only
Ducks ...	...	...	...	26	only	10	only
Ducklings ...	...	...	...	30	only	102	only
Eggs—Duck ...	...	...	...	40½	dozen	17	only
Culls ...	...	...	...	302	only	—	—
<i>Fish</i>							
Tilapia (bulk) ...	...	...	...	367	lb.	—	—
Shrimps ...	...	...	...	321	lb.	—	—
King Fish ...	...	...	...	50	lb.	—	—
Carite ...	...	...	...	196	lb.	—	—
Salmon ...	...	...	...	34	lb.	—	—

WEIGHTS AND MEASURES

4 drams	=	1 ounce (oz.)
16 ounces	=	1 pound (lb.)
28 pounds	=	1 quarter (qr.)
4 quarters	=	1 cwt. (112 lb.)
20 cwt.	=	1 ton (2,240 lb.)

2 pints	=	1 quart
4 quarts	=	1 gallon (Imperial)

(1) Cacao :

1 fanega	=	110 lb.
1 bag	=	200 lb. (dry cocoa)

(2) Rice :

1 barrel paddy = 160 lb.
(as milled locally at present, without
parboiling, provides approximately 100 lb.
clean rice).

(3) Citrus :

Average Weight—Standard Field Crate	—Grapefruit 80 lb.
	Oranges 100 „
Average Fruit—Standard Field Crate	—Grapefruit 80 lb.
	Oranges 200 „
Average Weight—Shipping Crate	—Grapefruit 80 lb.
	Oranges 90 „
Average Fruit—Shipping Crate	—Grapefruit 80 lb.
	Oranges 200 „
Weight Canned Juice—Case of 24 × 20 oz. cans	38 „ gross
Weight of Fruit—Per case of fruit	—Grapefruit 72 lb.
	Oranges 80 „
Average Weight of Standard Field Crate	80 „

(4) Limes :

1 barrel	=	160 lb.
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